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THE  
AMERICAN  
JOURNAL OF PSYCHIATRY

(FORMERLY THE AMERICAN JOURNAL OF INSANITY)

L. XIII

OLD SERIES VOL. XC

No. 6



MAY, 1934

UNDER THE AUSPICES OF  
THE AMERICAN PSYCHIATRIC ASSOCIATION

ISSUED BI-MONTHLY

SUBSCRIPTION, \$4.00 A YEAR

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## HEMATOPORPHYRIN AS A THERAPEUTIC AGENT IN THE PSYCHOSES.\*

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### INTRODUCTION.

Hematoporphyrin, a decomposition product of hemoglobin, has recently been suggested as a therapeutic agent in the psychoses, and is thought to be particularly efficacious in the depressive phases of manic-depressive psychosis. Just what the physiologic action is when injected into the body or how it contributes to the improvement of patients is not clearly understood. The theory most frequently expressed in the literature will be discussed later.

Hematoporphyrin is normally present in small quantities in the blood stream, but if increased through disease or the effects of chemical poisons becomes extremely toxic. The substance is removed from the circulation by the action of the liver and is converted into bile pigments and excreted. It occurs normally in the urine at times and after ingestion of sulphonal may be present in fairly large quantities. The substance hematoporphyrin is photodynamic and has marked fluorescence. It is an iron free derivative of hematin and can be manufactured commercially from horse blood by an involved procedure devised by Nencki.

### THE LITERATURE.

Some years ago Hausmann<sup>1</sup> proved the photosensitizing power of hematoporphyrin injected into animals. He found that when white rats, mice, and guinea pigs were given hematoporphyrin injections they appeared unaffected as long as they remained in the dark, but if exposed to light became toxic and died. Experimenta-

\*From the Institute and The Department for Mental and Nervous Diseases of the Pennsylvania Hospital.

tion with smaller doses caused the animals to become animated, aggressive, and quarrelsome. Large doses given to humans produced, on their being exposed to light, skin eruptions, redness, and edema. These effects sometimes persisted for weeks after a single injection.

In 1913 Meyer-Betz<sup>2</sup> injected 0.2 gram\* of hematoporphyrin into his own veins. The result was a pronounced photosensitivity for two or three months, persisting long after it became impossible to detect the substance in his blood. A few hours after the intravenous injection he exposed an area of skin on his arm to the rays of a water cooled Finsen lamp for 40 minutes. In a normal subject such exposure would be sufficient to cause the formation of a superficial bleb. However, on the day following the exposure the area was indurated and edematous. The exposed portion of the skin became dusky and necrosis occurred. A deep ulcer was formed which healed after a period of weeks but left a permanent scar. Exposure to sunlight produced giant edema of his face followed by a deep, persistent pigmentation of the skin.

Templeton and Lunsford<sup>3</sup> have reported cases of eczema solare related to hematoporphyrin. They relate the experiments of Pfeiffer in sensitizing animals to sunlight by the intravenous injection of hematoporphyrin. Pfeiffer was able to demonstrate that pigmented animals sensitized by the same doses were protected from the severe reactions observed in the non-pigmented ones. Templeton and Lunsford call attention to the fact that the photosensitizing effects of the porphyrins in the blood stream in the disease hematoporphyrin do not render the individual as acutely susceptible to sunlight as the synthetic products. These authors also express the opinion that hematoporphyrin may be the result rather than the cause of dermal sensitization. Rothman<sup>4</sup> reported two cases of hematoporphyrin which occurred during the summer. The patients had extensive burns with vesicle formation and later scarring. The acute attacks lasted only a few days and were associated with excretion of reddish urine rich in hematoporphyrin. Severe forms of hematoporphyrin seem to involve the peripheral nerves and in fatal cases terminal symptoms resemble Landry's

\* It is to be noted that this dose taken intravenously by Meyer-Betz is 50 to 100 times greater than the dose given intramuscularly in our investigations and 20 to 50 times as great as the customary oral dosage.

paralysis. Mason and Farnham<sup>5</sup> reported two cases of acute hematoporphyrin in adults, aged 53 and 36. The latter case died with terminal symptoms closely resembling acute ascending paralysis (Landry). Complete autopsy records accompanied this report. It is noteworthy that mental symptoms in the form of visual and auditory hallucinations, marked confusion and noisiness accompanied the acute phase of the illness. Recently Winkleman<sup>6</sup> saw a patient because of neurologic and psychotic symptoms. A diagnosis of acute hematoporphyrin was substantiated and terminal symptoms were those of acute ascending paralysis (Landry). There are said to be but 24 such cases reported in the literature. The presence of nervous system involvement and psychotic symptoms make the prognosis unfavorable. In none of the reported cases is any mention made of early mental symptoms such as euphoria, mild stimulation or acceleration of thought which might throw light on the present conception of hematoporphyrin therapy. It is necessary to keep in mind, however, that Garrod<sup>7</sup> and Templeton and Lunsford have called attention to the difference between the endogenous hematoporphyrin of disease and the prepared substance injected into the body. Garrod states that artificial hematoporphyrin has much more intense photosensitizing effects.

Huhnerfeld<sup>8</sup> in 1929 injected hematoporphyrin into rabbits and found that after 10 minutes they became livelier, reacted strongly to all stimuli, and showed no fear. The animals were given regular doses for two weeks and during this period they became voracious and gained 250 to 400 grams in weight. This same investigator was the first to apply the treatment clinically in depressive psychoses. He treated 13 patients with severe depression, of whom 10 were institutionalized. Two of this number were not affected physically or mentally, while 11 rapidly improved. Doses of 1 c. c. (2 mgm.) of hematoporphyrin hydrochloride were given intramuscularly daily or every other day for three or four weeks. Oral doses of 10 to 15 drops (3 to 5 mgm.) were given three times a day for the same period. In a recent article it is stated that appetite improves, gains in weight are consistent, and the inhibitory psychic symptoms disappear. The patients stated spontaneously that they felt better.

Becker<sup>9</sup> treated five cases of depression and had encouraging results. Hartmann and Weissman<sup>10</sup> gave hematoporphyrin hydro-

chloride in intramuscular and oral doses to eight patients with melancholia. Five of these showed marked persistent improvement, in two cases the first few injections brought decided improvement which failed to endure while another patient failed to respond at all. He irradiated all of the patients with ultraviolet light during the period of hematoporphyrin administration. Huhnerfeld<sup>8</sup> states that irradiation has to be carefully managed during hematoporphyrin treatment since in light-haired individuals it has produced excessive erythema and symptoms of toxemia even with what would ordinarily be considered average doses of ultra-violet therapy. Huhnerfeld<sup>8</sup> found a decrease of blood calcium after hematoporphyrin therapy and attributes it to a re-establishment of the blood electrolyte balance. In an auto-experiment this author received 10 doses of the substance and reported increase of appetite, improvement of digestion, and a feeling of mental comfort.

Vinchon and Bourgeois<sup>11</sup> reported great clinical improvement in four cases of melancholia. Agitation and depression were rapidly eliminated; the lengthy course of the psychosis was very materially lessened in each case.

Meyer<sup>12</sup> treated mild cases of neurasthenic depression with hematoporphyrin and reported that they were quickly restored to normal, and physical complaints were eliminated.

Klimke<sup>13</sup> found the therapeutic effects of hematoporphyrin to be excellent, and observed that the skin assumes a healthy, pinkish glow, that appetite and weight are improved. He feels, however that the benefits quickly disappear after cessation of active treatment.

In a recent publication, Huhnerfeld<sup>14</sup> has continued his experimental studies in the chemico-pharmacologic mechanism of hematoporphyrin. Pigs were chosen for study because of the similarity of their blood calcium level to that of humans. Normal blood calcium content was determined three times in each of three animals. Before treatment animal I showed a blood calcium of 13.5 mgm. per cent; animal II, 13.2 mgm. per cent; and animal III, 14 mgm. per cent. Doses comparable to those employed in the treatment of humans were given for a period of several weeks. Animal I then showed a blood calcium of 10.5 mgm. per cent (reduction of 3 mgm. per cent); animal II, 10.7 (reduction of 2.5 mgm. per cent); and animal III, 11.0 mgm. per cent (reduc-

tion of 3 mgm. per cent). Four weeks after cessation of hematoporphyrin medication, the blood calcium values had returned to former levels. In addition to the lowering of blood calcium, the animals gained an average of 40 to 50 pounds in weight. He also reported that rats fed 20 times the relative human dose showed toxic symptoms, became restless, and on exposure to brilliant sunlight died within three or four hours. Autopsy showed fatty degeneration of the liver and hyperemia of the splenic pulp combined with hemosiderosis. He states that excretion of hematoporphyrin is largely through the feces. The rate of excretion has been determined in rats, and it is found that more than half the dose is eliminated the first day and the remainder in three or four days.

#### CLINICAL STUDIES.

For our studies of the therapeutic effects of hematoporphyrin, 37 patients were chosen, divided as follows: 23 manic-depressives in the depressed or agitated and depressed phase, eight involutional melancholias, and six schizophrenics who could generally be regarded as hopeless institutional types.

Treatment consisted of two or three courses of intramuscular injections and at the same time increasing doses of drops given by mouth. The intramuscular injections were given as follows: 1 c. c. of solution (2 mgm. hematoporphyrin hydrochloride) every other day for 20 days, then after a five to seven day rest period a second course of 2 c. c. of solution (4 mgm. hematoporphyrin hydrochloride) every other day for a 20-day period. In a number of cases a third series of 2 c. c. injections was given. Oral doses were begun at 10 drops of solution (3 mgm. of hematoporphyrin hydrochloride) three times a day, before meals, during the first series of intramuscular injections, increasing to 15 to 30 drops (5 to 10 mgm. hematoporphyrin hydrochloride) three times a day, before meals, during the second and third series. Of the 23 manic-depressives (10 male and 13 female) so treated, five responded with marked sustained clinical improvement, six moderate sustained clinical improvement, six general physical improvement but without definite change in the course of the psychosis, and six failed to respond.

Of the eight involutional melancholia cases (three male and five female), four showed marked sustained clinical improvement, one moderate sustained improvement, two general physical gains, and one failed to respond in any way.



Of the six schizophrenics (four male and two female), five failed to make any favorable response while one seemed to be generally improved physically but the course of the psychosis has apparently been unaffected.

*Marked sustained clinical improvement* indicates prompt gain both physical and mental in cases in whom no progress had been demonstrable up to the administration of hematoporphyrin, or a reversal of unfavorable trend in those who appeared to be following a downward course. The term indicates that progress continued during the course of treatment and that the improved state was maintained at the time of writing. In addition it indicates that in the opinion of the medical staff the gain was quite certainly dependent upon administration of hematoporphyrin.

*Moderate clinical improvement* indicates a prompt and uninterrupted improvement following within a period of 10 to 20 days after the first administration of hematoporphyrin, but also indicates that the gain was not rapid enough nor was its apparent action specific enough to be able to say that the gain would not have occurred without the use of the drug. It implies that in all probability the clinical gains were dependent upon the use of the chemical and the subsequent course more satisfactory than it would have been without it.

*General physical improvement but without apparent change in the course of the psychosis* is meant to indicate those physical and slight temporary mental gains which seemed to have followed the use of the drug, and those whose status changed for the better in the course of the treatment but whose gains may or may not have been directly due to the drug. Included in this group are cases in which remarks as to responses to treatment were as follows: "feels better," "more cooperative," "appetite improved," "definite gain in weight," "improved blood picture," "speaks spontaneously and encouragingly for the first time in months," more self-confidence," "enters into activities for the first time," etc.

*No change* indicates that group of patients who were apparently not benefited in any way, whose favorable response was only of a few days' duration, or in whom the animation and stimulation was of a type which produced destructiveness, outbursts of temper, etc. In this group are a number of persons who subsequently improved or recovered but whose progress could not fairly be attributed to the use of hematoporphyrin.

Of the 37 patients treated, 20 gained in weight and experienced generally improved somatic states. The average gain was  $5\frac{1}{2}$  pounds over an average period of treatment of 50 days. Ten patients lost weight but otherwise seemed either somatically improved or at least no worse. Three patients in this group were under weight-reducing programs. The weights of seven patients remained unchanged at the end of the therapeutic program. Several of these gained rapidly at some time during the treatment but promptly lost weight again before the termination of the program.

Sixteen patients had blood studies done before and after treatment and of this number nine showed substantial increases in red blood cell count and hemoglobin. Six of this group revealed a moderate reduction in red blood cell count and hemoglobin. One was unchanged.

Three patients listed as unchanged nevertheless gained in weight and showed improved blood pictures. In one patient blood calcium studies were made and gave the following results: Before treatment 11.8 and 11.5 mgm. per cent, during and after treatment 9.6 and 10.0 mgm. per cent.

About a third of the patients became unusually tanned, to a point beyond that which they customarily acquired on long exposure to direct sunlight. All of these received ultra-violet radiation. No attempt was made to evaluate the effect of ultra-violet exposure in enhancing the beneficial effects of hematoporphyrin. Hartmann and Weissman state that improvement in mental attitude always seemed to follow immediately upon ultra-violet exposure.

TABLE I.

		Marked clinical improve- ment.	Moderate clinical improve- ment.	General physical improve- ment.	No change.
MANIC-DEPRESSIVE .....	23				
Male .....		2	2	4	2
Female .....		3	4	2	4
INVOLUTIONAL MELANCHOLIA..	8				
Male .....		2	..	1	..
Female .....		2	1	1	1
SCHIZOPHRENIA .....	6				
Male .....		..	..	1	1
Female .....		..	..	..	4
— .....	—	—	—	—	—
TOTAL .....	37	9	7	9	12

## DISCUSSION.

European investigators attribute the therapeutic effect of hematoporphyrin to its influence on the sympathetic nerve centers. They feel that the purpose of photodynamic constituents in the blood is to sensitize the tissues to light and thus convey stimuli to the vegetative nervous system. In the so-called endogenous depressions (constitutional cyclothymics), a popular European theory is that a diminished neuromuscular irritability resulting from disturbed electrolyte equilibrium and a heightened blood calcium content accounts for the symptomatology evidenced. Those who have written favorably of the effects of hematoporphyrin believe that it represents a causal therapy because of its influence on these fluctuating blood electrolyte values. Through the sympathetic centers there is then produced an elevation of spirits and freedom from inhibitory tensions.

Boyd<sup>15</sup> in his studies of the hydrolytic action of hematoporphyrin on fibrinogen in the presence of light furnishes a clue of another sort to the explanation of the supposed energy-giving effects of hematoporphyrin. The theory that he presents is as follows: "Hematoporphyrin absorbs light both in the ultra-violet and the visible spectrum. This absorption increases its energy content. When oxygen is present, with its large store of energy, it is able to unite with the (photodynamically) excited hematoporphyrin molecule, and to oxidize it, passing its energy over to it. This has a double result: The energy content of the hematoporphyrin molecule is so increased that it becomes unstable and decomposes. A portion of the energy of the excited hematoporphyrin molecule may be passed through its union with the protein to the latter, and lead to its excitation also."

Just what transmutation of the energy thus captured by hematoporphyrin occurs to produce the apparent physiologic stimulation and the apparently improved general psychic tone, it is impossible to say. Whether any transmutation is necessary is also unknown to the writers. Speculation would be intriguing but the present contribution does not hope to present any coherent theory as to the manner in which clinical improvement is brought about.

There is no doubt that vegetative disturbances in manic-depressives and involutional melancholias are pronounced. Whether this

imbalance is primary or secondary to the emotional stresses of the illness is a debatable question. We have no wish at present to attempt to argue one or the other of these sides of the matter. From a purely empirical approach there seems to be evidence indicating possible therapeutic effect of hematoporphyrin in the depressions.

Many variables confront us in attempting to approach such an experiment from a scientific angle. Patients with manic-depressive psychosis recover in the vast majority of cases with or without treatment. It is not possible to say with absolute certainty that the course of the illness was materially shortened by the use of hematoporphyrin. The criteria for judging improvement could not be in any way specific. We relied on a consensus of opinion of physicians and nurses, observations of the patient's appetite, weight, and general appearance, whether apathy was diminished, or agitation lessened, and the subjective experiences of the patients. The most common expressions were: "I feel better—have more desire or at least less repugnance for food," "have better hold of myself," "do things better," "think more clearly," "have more pep," "feel less hopeless," "encouraged by gain in weight," "feel steadier, sleeping better, and getting interested in things again," "less tension in my head, mind has cleared," etc.

One of the more specific evidences of its therapeutic effects seemed to us to be the fact that in a large number of patients prompt improvement occurred during the first course of treatment, but when the drug was stopped for an interval of five to seven days a definite decline was evident. Prompt improvement again was obvious when the treatment was resumed. The most satisfactory gains were in the cases of mild depression, chiefly among those patients not hospitalized because of the benign nature of the psychosis. This type, however, may also be said to be the more susceptible to the suggestion aspect of the treatment. Yet it is our experience that suggestion plays little if any significant part in the treatment of the depressions.

A few suggestions as to possible dangers ought to be made. The drug should be kept in a dark place and exposure to light avoided. Decomposition is fairly rapid due to its strong photochemical nature. Blonde or auburn-haired individuals do not tolerate large doses of the drug and exposure of these patients to ultraviolet light should be cautious. A few of our patients with blond

or auburn hair developed erythema on exposure to comparatively small doses of quartz lamp radiation. The injection of the drug should be intramuscular ( $1\frac{1}{2}$  inch needle) and never subcutaneous. One of our patients after a careless injection (given subcutaneously), during a visit to the tropics developed a painful first degree burn on exposure to direct sunlight. The erythema persisted for more than two months. The foreign literature stresses the danger of giving hematoporphyrin to patients with pernicious anemia, malignant disease, or hepatic pathology.

#### SUMMARY.

(1) Hematoporphyrin has a marked photosensitizing power when injected into the human body. The synthetic product, hematoporphyrin hydrochloride ("Photodyn")\* has been demonstrated to possess greater photosensitizing power than the compound endogenously produced through disease.

(2) Experimentally the drug has been shown to produce alteration in the blood electrolyte values—chiefly calcium. The only one of our patients in whom blood calcium studies were made showed a definite fall in blood calcium during and after hematoporphyrin therapy.

(3) Results of animal experimentation seem to show that increased physiologic and psychologic drive results from enteral and parenteral administration of synthetic hematoporphyrin.

(4) Hematoporphyrin as a therapeutic agent in the depressive psychoses is reported in foreign literature to be successful in a large majority of cases. So far as we know, no carefully controlled study has yet been done in any substantial number of cases.

(5) Thirty-seven patients were studied in our series to determine their responses to hematoporphyrin administration. Twenty-three patients with manic-depressive reactions were treated during the depressed phase with intramuscular and oral administration of hematoporphyrin hydrochloride for an average period of 50 to 60 days. Of this number five showed marked sustained improvement, six showed moderate sustained improvement, and six were generally benefited but the course of the psychosis did not seem to be

\* "Photodyn" is the trade name for hematoporphyrin hydrochloride prepared by the formula of Nencki.



positively affected. Six gave no favorable response. Seventeen patients of 23 can be said to have been definitely helped by the treatment.

(6) Four of eight patients suffering from involutional melancholia showed marked improvement which has been maintained after the treatment was terminated. One was moderately improved and has maintained this gain. Two were generally better during and after treatment but have not made complete recoveries. Only one failed to respond favorably.

(7) One schizophrenic of six treated made substantial physical gains, remains generally better and has adjusted his life at a considerably lower level but is working steadily. Definite stimulation and animation were evident in all of the schizophrenics treated but in five of these patients the reaction was not of constructive nature. These five subsided into passive states after the treatment was discontinued.

(8) It is evident from our experience with hematoporphyrin that when administered to psychotic patients the substance in some way increases the available energy of the individual. The explanation of the mechanism of improvement will have to await more detailed studies. It is significant, however, whatever the physiologic action, that actual somatic and psychic benefits seem to be derived from its administration.

## CASE SUMMARIES.

	Sex.	Age.	Diagnosis.	Comment.	Response to treatment.	Remarks.
1.	F	24	Manic-depressive (depressed).	First attack .....	Prompt gain immediately under treatment. Gained 6 lbs. Maintained improvement.	Improvement attributed directly to "photodyn." Recovered.
2.	M	44	Manic-depressive (depressed).	Second attack .....	Apparently becoming worse. Made rapid improvement within 10 days after treatment began. Gained 3 lbs. Returned to professional duties five weeks.	Improvement attributed directly to "photodyn." Recovered.
3.	M	52	Involutional melancholia.	Four years prodromal period.	Gave up position 10 months previous to treatment. Definite and prompt response to medication. Sustained improvement. Gained weight. R. B. C. improved markedly.	Returned to professional activities. Improvement attributed to "photodyn." Acquired deep tan on ultra-violet radiation.
4.	F	39	Manic-depressive ("psychoneurotic depression").	One year duration.....	Gradual definite improvement following promptly after treatment. Gained weight. Regained self-confidence.	Traveled extensively after having been isolated for one year. Improvement due directly to "photodyn." Recovered.
5.	F	47	Manic-depressive (depressed).	Six months duration.....	Stationary in profound depression for five months. Responded promptly after second week of treatment. Recovered five weeks and returned to active social life.	Improvement attributed to "photodyn."
6.	F	50	Involutional melancholia.	One year duration.....	Confused, agitated, condition unchanged for four months. Response was prompt during course of treatment. Recovered after two months. Gained 6½ lbs.	Returned to home. Follow-up states patient better than any time in four or five years. Improvement attributed to "photodyn."
7.	F	42	Involutional melancholia.	(Followed artificial menopause.) Duration one year.	Marked improvement during first course of treatment. Gained in weight. Slight reaction to injections (auburn hair). Follow-up indicates complete recovery.	Improvement attributed to "photodyn."
8.	M	52	Involutional melancholia.	Long prodromal period. Duration of acute depression three months.	Definite, prompt improvement during treatment. Gain in weight. Improved R. B. C. Acquired deep tan on exposure to ultra-violet. Feels "better than in years."	Improvement attributed to "photodyn."

## CASE SUMMARIES.—CONTINUED.

	Sex.	Age.	Diagnosis.	Comment.	Response to treatment.	Remarks.
9.	M	43	Manic-depressive (depressed).	Second attack. Duration three months.	Becoming progressively worse at start of treatment. Prompt reversal of trend. Became bright and animated during first course of treatment. Gained in weight. Follow-up: Recovered.	Improvement attributed to "photodyn."
10.	F	44	Involutional melancholia.	Ten months duration. Artificial menopause at thirty-one.	Patient stationary, tube fed, resistive for three months. Moderate clinical improvement followed promptly after first two weeks of treatment. Patient acquired deep tan. Gained 10 lbs. in course of treatment.	Consistent improvement to recovery in three months of "photodyn" treatment.
11.	M	27	Manic-depressive (circumlar).	Fourth psychotic depression at inauguration of treatment.	Moderate improvement to recovery during treatment. Improvement attributed to "photodyn" of subjective but definite character.	Maintaining normal status in professional activities.
12.	F	46	Manic-depressive (depressed).	Recurrent depressions . .	Stationary in depression for several months. Other methods of treatment unsuccessful. Improvement began during first course of treatment. Gained 4 lbs.	Moderate clinical improvement maintained.
13.	M	59	Manic-depressive (agitated depression).	Second attack . . . . .	Patient stationary, tube fed, resistive at beginning of treatment. Gradual definite gains in condition during course of "photodyn." Gained 5 lbs. Improved R. B. C.	Moderate clinical improvement maintained.
14.	F	40	Manic-depressive (depressed).	First attack. Several months unchanged.	Improvement occurred promptly during course of treatment. Taken home by family because of apparently satisfactory gain. Gained weight.	Subjective improvement very satisfactory. Moderate general gains under treatment.
15.	M	24	Manic-depressive (depressed).	Some admixture of schizoid symptoms.	Unchanged for two months. Improvement during first course of treatment prompt. Retrogressed when treatment stopped for 10 days. General improvement prompt when treatment resumed.	Subjective improvement very satisfactory. Returned home after four weeks of "photodyn" treatment.
16.	F	23	Manic-depressive (depressed).	Circular type—depressive phase one month duration.	Improvement prompt during first course of treatment. Consistent gain continued to recovery.	Moderate improvement. Mild hypomanic phase of two weeks duration followed return home.

## CASE SUMMARIES.—CONTINUED.

	Sex.	Age.	Diagnosis.	Comment.	Response to treatment.	Remarks.
17.	M	52	Involuntional melancholia.	Prodromal phase. Four years duration.	Physical improvement under treatment very substantial. Remained for indefinite period at higher level but course of psychosis stationary. Patient acquired deep tan.	General improvement well maintained but not recovered after five months.
18.	M	47	Manic-depressive (depressed).	Circular psychosis. Complicated by general paresis.	Very substantial gains followed immediately after institution of treatment. Gained 9 lbs. Acquired deep tan.	Recovery from depressed phase prompt but general course of alternating phases unchanged.
19.	M	36	Paranoid schizophrenia...	Marked affective display— anxiety marked.	Marked general improvement during course of treatment. Acquired deep tan. Gained weight.	Returned home and recently has gone to work.
20.	F	55	Involuntional melancholia.	Seven years duration....	Agitated, noisy, negativistic, destructive for seven years. Became at times cooperative during treatment. Gained weight. Improvement in R. B. C.	General physical improvement but only slight change in the course of the psychosis.
21.	M	54	Manic-depressive (agitated depression).	Third attack .....	Resistive, hostile, noisy, tube-fed for several months. Apparently becoming gradually worse. After first course of "photodyn" slightly more cooperative, no longer tube fed. Blood pressure increased. Weight up 5 lbs. under treatment.	No real change in course of psychosis but seems generally improved physically.
22.	M	21	Manic-depressive (depressed).	Duration three months...	Course of psychosis downward. Resistive, tube fed, untidy. During course of treatment became a little more animated and cooperative. Gained 4 lbs. R. B. C. improved.	General physical improvement definite. More cooperative but change in course of psychosis very slight. Subsequently recovered during treatment.
23.	F	64	Manic-depressive (agitated depression).	Third attack .....	Course of psychosis downward at beginning of treatment. Forced feedings necessary at times. During course of treatment became quieter and more cooperative. General physical improvement.	Some general improvement apparently due to "photodyn," but course of psychosis not materially changed.
24.	F	24	Manic-depressive (depressed).	Circular .....	Treatment began as trend seemed downward. Prompt general improvement noted at first but relapsed and remained at higher level. Physical gain definite.	Definite general improvement. Subsequently recovered.

## CASE SUMMARIES.—CONTINUED.

	Sex.	Age.	Diagnosis.	Comment.	Response to treatment.	Remarks.
25.	F	43	Manic-depressive (depressed).	Second attack complicated by menopause.	Failed to respond to all forms of treatment. Followed course of depression through seven months period without apparent change in course of psychosis.	Unchanged as result of treatment. Subsequently recovered and returned to professional duties.
26.	F	27	Schizophrenia (catatonic).	Three years duration....	Catatonic state, tube fed, periods of violence. Reaction to courses of "photodyn" obviously result of stimulation—became manic with marked overactivity, flight of ideas, distractibility, and elation. Sub-sided quickly after "photodyn" was stopped.	Course of psychosis unchanged by "photodyn."
27.	F	54	Involutional melancholia.	Duration of illness seven months.	Tremendous agitation and resistiveness apparently becoming worse. Under treatment became a little more quiet and cooperative. Seemed definitely improved after first course of "photodyn" but quickly retrogressed.	Course of psychosis unchanged by treatment.
28.	F	36	Manic-depressive (agitated depression).	Duration of acute psychotic phase six months.	Took Lysol in suicidal attempt and developed oesophageal stricture. Fed via gastrostomy. Agitation and resistiveness marked. Made no noticeable progress under treatment.	Course of psychosis unchanged by treatment.
29.	F	32	Manic-depressive (agitated depression).	Psychosis of involutional character followed artificial menopause seven months before admission to hospital.	Agitation severe. Glandular therapy over a period of several months provoked no favorable response. Response to "photodyn" very favorable after first course, then ceased. Improvement evident again during third course. Gain moderate but definite. Acquired deep tan.	Patient returned to her home after third course of "photodyn." Apparently generally improved.
30.	M	56	Manic-depressive (depressed).	Fourth attack. Duration six years.	Depression resistant to all forms of treatment. Regressive trend was marked. No response evident to drug. After second course of "photodyn" appeared to be ataxic and weak.	No change in the course of psychosis. Questionable whether symptoms of inco-ordination were produced by "photodyn."



## CASE SUMMARIES.—CONTINUED.

	Sex.	Age.	Diagnosis.	Comment.	Response to treatment.	Remarks.
31.	M	68	Manic-depressive (agitated depression).	Five years duration.....	Stationary in psychosis up to beginning of treatment. Seemed definitely to improve after first course. Then again remained stationary. Gain in weight. Improved R. B. C.	No definite change in the course of psychosis.
32.	F	27	Manic-depressive (agitated depression).	First attack. Duration of psychosis six months.	Agitated, noisy, untidy, very resistant to all forms of treatment. No evident benefit. Weight gain during first and second courses of treatment promptly lost.	No change in course of psychosis.
33.	F	32	Schizophrenia (catatonic).	Duration seven years....	Patient made partial recovery three years ago after narcosis treatment. Under "photodyn" made no apparent change but subsequently seemed generally improved. R. B. C. improved moderately.	No definite change.
34.	F	35	Schizophrenia (catatonic).	Duration fifteen years....	Catatonic with occasional outbursts of violence. Under "photodyn" made no improvement. Only apparent change was stimulation to greater violence during periods of furor.	No improvement.
35.	F	31	Undiagnosed psychosis (schizophrenia paranoid type?).	Duration two years.....	Unchanged after one and a half years of hospitalization. Had previously made partial recovery under glandular therapy. Response to "photodyn" not favorable. Patient felt the treatments had made her more restless.	No improvement.
36.	M	30	Schizophrenia (paranoid).	Duration sixteen years....	Course unchanged in hospital for five years. Under "photodyn" treatment appeared to be greatly stimulated but not constructively. Gained 7 lbs. in weight.	No improvement.
37.	F	20	Manic-depressive (circumlar).	Depressive phase two months duration.	College career interrupted twice by depressive phases. During first course of "photodyn" treatment felt slightly stimulated and returned to school for short period. Later gave up and remained unchanged for several months. Subsequently recovered.	No improvement.

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## NUTRITION IN MENTAL HOSPITALS.\*

By M. A. BLISS, M. D., St. Louis.

Casual observation gives the conviction that a poorly fed population, sane or insane, criminal or usually law-abiding, is a restless one, and potentially a dangerous one. The locked-in populations of mental hospitals are similarly situated to the laboratory animals and fowls in the great experimental laboratories. They have no opportunity to follow certain instinctive guides in diet with which nature endows us. Phosphate hungry cattle on the western plains can and do pick up and chew dry bones but deficiency hunger in mental patients may go unsatisfied. It is my opinion that such hunger may result in eating excessively such foods as may be available in the vain search for the missing elements. Aside from consideration of what we think as to pleasing the palate there are important facts, recently established, in the chemistry of food and nutrition which should be more fully appreciated by mental hospital administrators. Visits to many research laboratories, both plant and animal, in this country and abroad, give the impression that the medical profession has not yet fully availed itself of the important discoveries applicable in our special field.

In average state hospitals in America there is apt to be an ambition on the part of the officer personnel to make a good showing in low per capita cost. With the vast numbers to be cared for the total tax expenditure is very great and legislators often generous to themselves, scan the cost of care of the insane very keenly. I am not saying that economy of administration is not necessary. What I hope to show is that the per capita cost need be little, if at all, increased by the application of the newer knowledge of nutrition. Most state hospitals have land available on which they can produce a certain per cent of the food consumed fresh. Herds are maintained for the production of milk. Flocks of chickens provide eggs. But unless there is a full appreciation of the importance of the best level of nutrition possible within the money limitations, the results may be far from satisfactory. We are still partially

\*Read at the eighty-ninth annual meeting of The American Psychiatric Association, Boston, Mass., May 29-June 2, 1933.

under the shadow of the hopelessness of other days in our attitude toward the residual group in mental hospitals and the entire patient personnel suffers in consequence.

#### DEFICIENCY DISORDERS.

The history of deficiency diseases may be said to date from the publication of Eijkman's paper in 1897, although observations in other fields and shrewd deductions therefrom had been made before then. After Pasteur a microbic or bacterial cause was postulated to explain most tissue lesions. We had to learn that they could come from the absence, as well as from the presence, of something. Eijkman's paper was from a medicinal or pharmaceutical viewpoint and it was later that Funk named the hypothetical substance in rice polishings which cured beri-beri in fowls, a vitamin now vitamin B<sub>1</sub>.

When seven years later, in 1904, I presented before the American Neurological Association the cases of beri-beri which had appeared among the Philippine tribes exhibited at the World's Fair in St. Louis, none of us knew it as a deficiency disease. We had a faint idea that it came from eating too much rice, just as later it was thought that pellagra came from eating too much corn. And later in the same year when I identified 26 cases of beri-beri in the Farmington State Hospital I thought they might have come from over-drugging by an incompetent assistant physician.

Dr. E. D. Bondurant of Mobile who reported a group of cases in a mental hospital in Alabama and Dr. J. J. Putnam of Boston who reported cases in the Tewksbury Almshouse (Mass.) were equally in the dark as to etiology, as was also Dr. D. F. Rambaut who saw a considerable group in an Irish mental hospital. It is reasonable to assume that many unreported cases occurred and perhaps are still occurring, without being recognized, for degrees short of the full fledged disorder may readily be confused with other affections.

Rather closely allied to beri-beri but usually showing more pronounced mental symptoms, is pellagra. When in 1912 the State of Illinois decided to remove the insane from the almshouses many were concentrated at the Peoria State Hospital at South Bartonville. I went with Dr. Engman, a dermatologist of St. Louis, to see the 75 or more cases of pellagra there under the care of Dr. George



Zeller, who was experimenting with control groups to determine the part played by corn. His conclusion was that those fed on corn products got a little fatter than the others.

It is curious that vitamin B, the original anti beri-beri vitamin, should be found to contain an anti-pellagra fraction which came to be known in America as "B<sub>2</sub>" and in England as "G," and equally curious that both vitamins should have been carefully removed from rice and grains in the effort to improve the appearance of the product.

Xerophthalmia, from deficiency of vitamin A has been less frequently identified in the hospitals of the middle West with which I am most familiar, but it is the opinion of good observers that Keratinizing of epithelium, due to deficiency of this vitamin brings increased incidence of eye infection, and of ear and respiratory infections. Professor Mellanby, of Sheffield University, believes that even puerperal infection is notably less frequent among women who have been adequately supplied with this vitamin.

There was long-time use of cod-liver oil empirically for respiratory diseases before we knew anything of the vitamins. The use of butter, eggs and whole milk and cheese was based on vitamin A values and now it is known that liver and certain garden vegetables, especially escarolle, are especially rich in vitamin A.

Scurvy has been known as an entity for centuries and nearly two hundred years ago its connection with certain food deprivations was commented on. We rarely see fully developed scurvy, but as in the case of the other vitamins than C, much happens before the fully developed disorder becomes painfully obvious. A sallow skin, a feeling of malaise, lack of energy, fleeting pains may mark lesser degrees of deficiency which if not corrected, will result in scurvy. The difficulty met by relatives in feeding and caring for patients before they are admitted to the hospital is often accountable for vitamin deficiency. Beri-beri, pellagra and scurvy are closely allied and yet each is best prevented and cured by a different vitamin.

Rickets is a disease of infancy and we are not supposed to have infants in mental hospitals. But the relation of vitamin D to the calcium-phosphorus-hormone balance, and the influence of sunlight on the ergosterol of the skin makes a discussion appropriate. Bones and teeth are living tissues and even in adults are influenced by

the calcium-phosphorus-vitamin D ensemble. Following the discoveries of Steenbock the great dairy companies have enriched milk in vitamin D by feeding irradiated yeast to cows. Hess has shown that irradiation of milk at an astonishingly small cost is effective. The irradiation of many standard foods is now done. And to secure adequate vitamin D values in untreated milk much can be done by planning the ration of the cows.

#### THE MINERAL SALTS.

The medical world has long sought eagerly among the salts of the metals for agents of cure. The research into vitamins has brought a reexamination of the values of chemically well known substances and it now appears that we must reclassify medicines and transfer some to the group of indispensables of nutrition. Such a well known substance as iron, when severely withheld, will result in tissue changes quite comparable to those of vitamin deficiency. Dr. McGowan at Rowett Institute in Aberdeen showed me the pathology in a young pig grown in a cement pen on iron-deficient milk of its mother.

Through the work of Marine, Kendall, and now of many others we have become familiar with the influence of iodine, not only in the prevention of goiter, but in the maintenance of a good level of nutrition. Great areas of this country, not yet very clearly mapped out, are very low in the iodine content of the soils and waters. We in Missouri have had a partial survey which places nearly the entire state in the "low iodine belt." In some areas goiter and cretinism occur frequently. The now rather wide use of iodized salt is probably modifying the deficiency but in the state hospitals we are using in addition a Japanese sea weed containing .223 per cent iodine. Sea weed is a common article of diet in China and Japan. Some varieties are esteemed great delicacies. But it seems probable that these two ancient races have learned empirically that nutrition was improved by its use. The salts of iodine are very rapidly eliminated and it would seem that the use of sea weed has a reasonable basis. The relation of iodine to the thyroid gland and the rôle of this gland in metabolism are worthy of still further investigation.

Hart and his co-workers at the University of Wisconsin have established the copper-iron relation which promises to greatly mod-

ify our views of the treatment of anemia medicinally and also our views as to what foods best supply these two metals.

The rôle of manganese and zinc in nutrition is not yet clear but both are classed by McCollum as indispensables.

Calcium and phosphorus, so abundant in the organism, have long had established places but it has been only since intensive research began that their inter-relation and the relation of both to the vitamins and hormones began to be clear.

The over-crowding of American mental hospitals makes mass feeding imperative. Relatively few have individual rations. The menus must be planned to supply basic needs. So while we recognize the great variations in human organisms in their capacity to metabolize, good ordinary procedure is to supply what brings the greatest good to the greatest number.

The discoveries of the laboratories may not always be directly applicable in hospital practice; but after many contacts with investigators in this country and abroad I am convinced that too wide separation from medical procedure exists. It would seem that veterinarians have more successfully applied the discoveries of recent years than have we of the medical profession. The cattle, hogs and chickens at mental hospitals are scientifically fed.

Studies have shown the wide variation among plants in their ability to synthesize certain substances. For instance, lettuce will synthesize more iodine, soy beans more protein and fat, escarolle more vitamin A, kale and spinach more iron. I personally believe that the nutritional value of plants depends very much on the content of the soil on which they are grown, and that we shall come to planning soils for quality instead of only for quantity as at present. Lack of facilities have prevented my proving or disproving this hypothesis.

Already the work of the research laboratories has enabled us to more wisely select foods for institutional populations and my plea is that we avail ourselves more fully of what is already known and watch carefully for what is "still in the lap of the gods."

#### METHODS.

Our experience in Missouri leads us to believe that much can be done to improve the general nutritional level within present per capita cost. Milk is the nucleus about which a good diet should be

formed. We maintain high grade Holstein herds and in most of the year can give each patient a pint or more of whole milk each day. We buy milk powder for cooking. Oleo has been much used but we succeed in serving real butter once or twice each week. And we buy some cheese.

We grow two varieties of edible soy beans which carry nearly 40 per cent protein and 12 per cent to 15 per cent fat. They are ground—as used—into flour and mixed with wheat flour—80 per cent wheat flour—for bread, rolls and cookies. They are also served as baked beans and chili and to some extent as green beans. While we recognize that we cannot supplant animal proteins and fats with those of vegetable origin we gain in calories, and no matter what combination of vitamins and mineral salts we devise we must have an adequate number of calories. We think with satisfaction of how the Chinese stay well nourished on soy beans and soy products.

We have calculated rather closely the amount of each product we shall need for use fresh and what we should put away for winter use. We know what we may expect to harvest in an average season on a given area, and we plan our gardens and vineyards accordingly. Each mental hospital cultivates about one thousand acres. For a 1600-bed hospital we plan 175 acres for vegetables, and always have enough able bodied patients to insure thorough and frequent cultivation.

We cannot afford citrus fruits so we substitute tomatoes. They are supplied freely raw and cooked during the growing season and put away for winter. We have adequate canning equipment at each hospital and put away a surplus occurring at any time. Wastage is negligible and botulism absent.

For raw leafy vegetables we grow lettuce, cabbage and Chinese celery cabbage. We grow enough mustard greens, spinach, kale and Swiss chard to put away many thousand gallons. For the season of 1931 we fed fresh fruits and vegetables abundantly and put away 100,000 gallons. For the 1932 season the amount in the four mental hospitals will exceed 120,000 gallons, although we had unfavorable growing conditions—drouth, hail, etc.

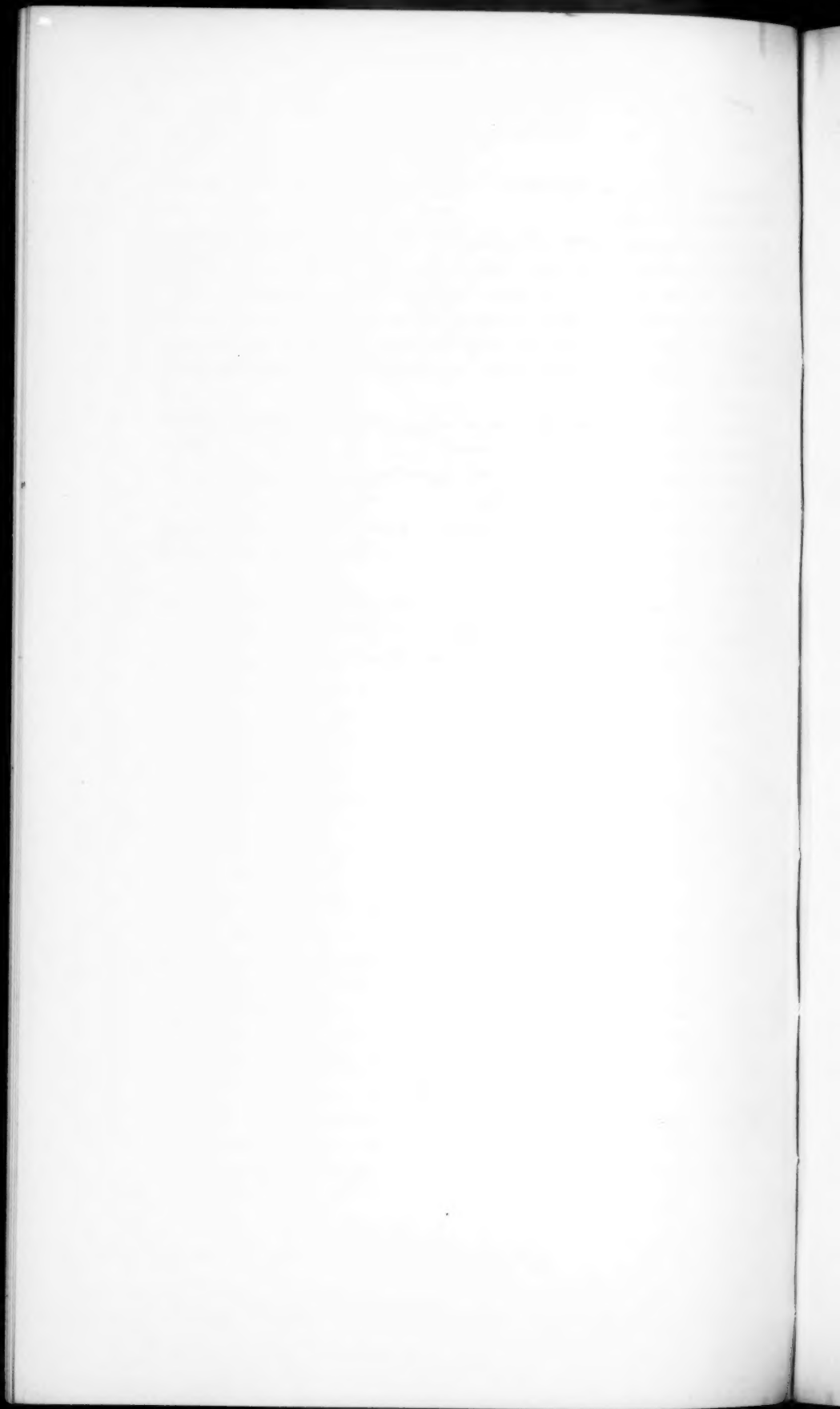
It is possible at the climatic level of central Missouri to grow lettuce and Chinese cabbage under straw during much of the winter and to keep a stock of fresh cabbage by inverting the heads and

covering all but the tips of the roots with loose earth. Turnips can be buried in mounds.

We grow strawberries sufficient to serve the entire patient group a number of times during the season. We have land too thin for other crops on which we grow blackberries in abundance. Each hospital has an adequate vineyard and a fair orchard of apples, peaches and plums. If the hospital land produces to much advantage some particular crop we exchange between the other hospitals.

Aside from pure nutritional considerations the psychic and economic returns are great. The patients employed are out in the open, hours of work are limited by the physicians to the capacity of the individual, pride in accomplishment is aroused. The economic return for the labor of those capable of a few hours work each day easily covers the cost of their care and even some of the cost of their totally helpless fellows.

I am aware that many hospitals are already doing much of what I have tried to present but a study of the menus of many hospitals gives the impression that they can be improved.





## AN INTENSIVE PSYCHIATRIC STUDY OF PRISONERS; THE RECEIVING ROUTINE IN THE CLASSIFICATION CLINIC ELMIRA REFORMATORY.\*

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Psychiatric literature in recent years has contained many discussions on the psychiatric study of offenders, and there is no doubt that these discussions have had their effect in changing the attitude of society towards the so-called criminal. Beccaria writing in 1764 before modern psychology was ever heard of apparently maintained the view of equal responsibility, but on humanitarian grounds he rejected the policy of retribution and argued that punishment should be inflicted only as a measure of social policy through its deterrent influences on potential offenders.

At the beginning of the 19th century Gall, the father of phrenology, maintained that there was unequal mental endowment in different individuals and so unequal responsibility.

In 1876 Lombroso postulated that the offender was the victim of criminal heredity and presented a workable classification of criminal types.

The work in this country was not brought to a head until 1908 when Guy Fernald started his psychiatric work at the Massachusetts Reformatory.

The first juvenile court clinic was established by William Healy in the juvenile court in Chicago in 1909, although the juvenile court, which was a move in the right direction, began in 1899.

The first adult court clinic was organized in 1913 by V. V. Anderson in the municipal court in Boston, and the same year A. W. Stearns began his well known study of inmates at the Massachusetts State Prison. Dr. Katherine Davis, the first superintendent of the New York State Reformatory for Women, interested Mr. John D. Rockefeller, Jr., in the necessity for studying

\*Read at the eighty-ninth annual meeting of The American Psychiatric Association, Boston, Mass., May 29-June 2, 1933.

each individual inmate—mentally, physically, and in regard to her social and other records previous to her commitment. As a result, in 1913 Mr. Rockefeller established the Laboratory of Social Hygiene adjacent to Bedford Reformatory and an arrangement was made with the State of New York, under which for a period of five years, the laboratory was given the privileges of studying every person committed to the Reformatory. The findings and conclusions of the studies have enlightened considerably our knowledge of this type of delinquent.

In order to create general interest in this study of the individual prisoner, the National Committee on Prisons and Prison Labor made a preliminary survey during 1914-15 to ascertain what the various states were doing in regard to the physical and mental examination of prisoners. The results of this survey showed the inadequacy even of the most necessary physical examinations.

The committee then arranged for a visit to Sing Sing by L. Pierce Clark and George H. Kirby, who prepared a memorandum regarding psychiatric studies of prisoners and recommended experimental work at Sing Sing. To carry through this proposal a Committee on the Mental Hygiene of the Prisoner was organized in 1916, under the chairmanship of Thomas W. Salmon.

Dr. Salmon prepared for this committee a plan for the proposed medical examination, treatment and classification of admissions to the State Reception Prison at Sing Sing which was published by the National Committee on Prisons and Prison Labor. The committee appealed to the Rockefeller Foundation for funds for a five-year demonstration at Sing Sing and in July, 1916, the appropriation was made and the first prison classification clinic was established in one of the old hospital rooms of Sing Sing, and here in 1917, Bernard Glueck drew up a workable psychiatric classification.

Herman M. Adler was appointed state criminologist for Illinois the same year but it was not until 1924 that a routine psychiatric examination of prisoners became legal, when a law was passed in Massachusetts for the examination of convicted prisoners in its jails. No other state as yet has begun doing this as a matter of routine although in 1929 the American Bar Association gave approval to a report prepared by its Committee on Psychiatric Jurisprudence which recommended that psychiatric surveys be made

available in all criminal and juvenile courts and to all penal and correctional institutions. They further maintained that no person should be sentenced in a felony case in which the judge had discretion until a psychiatric report had been filed as a part of the record, and that no prisoner should be released from a sentence for felony until a psychiatric report had been made. This report was approved by the American Medical Association.

The American Prison Association, state associations like that of Pennsylvania and New York, and special commissions such as the Lewisohn Commission in New York, operating under state authority, have done a great deal to introduce psychiatry in prisons. Undoubtedly one of the most influential agencies stimulating this progress in the United States has been the National Commission on Law Observance and Enforcement, which made its report in 1931. Social-psychiatric research in this field is being pursued in every part of the country by universities, agencies, and individuals. Unfortunately, much of this work has been misdirected and unscientific, but it is hoped that the American Psychiatric Association will take a more active interest in criminology.

A psychiatrist as a part of the administrative staff of correctional institutions is still somewhat of a novelty, since a survey this spring of the 307 state and federal institutions in this country showed 38 institutions with a full time psychiatrist, and 15 with a part time or consulting psychiatrist. There were 37 institutions that had a full time psychologist, and 14 with part time psychologist. This specialized personnel has been added mostly within the last ten years, and although 14 per cent of our institutions have psychiatric service, less than half of these institutions examine all inmates upon admission as a matter of routine while the other institutions examine only selected cases—those suspected of suffering from psychoses. The survey further brought out the fact that much of the alleged psychiatric work in these institutions is performed by prison physicians who have practically no qualifications in psychiatry. It is of great importance to note that these institutions that use some form of psychiatric approach represent less than one-eighth of the number of commitments in the United States, which last year amounted to over 127,000 individuals.

Recently a survey was made of 1168 courts of original criminal jurisprudence in the United States. It was found that 110 courts

in 31 states, or 9.4 per cent of the total, were regularly served by public psychiatric agencies or had psychiatrists of their own either on a full or part time basis. Seventy courts had psychologists. It was found that approximately 7 per cent of the defendants were examined psychiatrically. Obviously, the 7800 adults examined in these courts represented a very small proportion of the criminal cases disposed of each year in this country, when we realize that more than 500,000 individuals were held for trial.

The classification of prisoners, which means the trend toward individualization in penological treatment, has been given its greatest impetus in Massachusetts, New Jersey, New York, and the United States Bureau of Prisons which was organized in 1929, although case studies are also being carried out amongst the prisoners of Michigan, Wisconsin, Illinois, Pennsylvania, Ohio, Colorado, California and Utah. In several states there are statutory or regulatory provisions for the examination by official agencies of specific cases of offenders. The classification work in New York State has received its greatest momentum from the report of V. C. Branham published in 1931, although the first classification clinic in New York State was established in Sing Sing Prison in 1927 under the direction of Amos T. Baker. In the summer of 1931 a second clinic was set up for the new Attica Prison under the direction of Walter B. Martin, while the third clinic was established at the Elmira Reformatory in October, 1931, under the direction of James L. McCartney. The classification work at the Elmira Reformatory has met with the whole-hearted support of the superintendent of the institution, Frank L. Christian, who is a physician and psychiatrically minded individual; a happy combination seldom, if ever, found in a prison warden.

In September, 1932, a new hospital was opened at Elmira Reformatory and the old hospital building was converted into a receiving unit to house the classification clinic, which had been functioning for a year. This is a four-story structure with ample offices on the first floor and a lecture room. The top three floors are three dormitories, where the new men spend ten days in each dormitory. The prisoner on being received at the reformatory is retained in an individual cell for the first night until he is given a brief physical examination to determine the presence of any

infectious disease. Blood for a Wassermann and a throat culture is taken from every man, and sent to the state laboratory. He is then assigned to a bed in the first dormitory and remains in the receiving building for the next 30 days. Within 24 hours the man is interviewed as to his family, his school, vocation, and delinquent history. His medical history in other institutions that he has been in is also registered at this time. Immediately, questionnaires are sent out to the various individuals and institutions that he has listed in order to obtain further information and to verify the inmate's statements. Following this preliminary examination the man adheres closely to a four-week schedule of tests, interviews and lectures. Monday morning of the first week the man is given a thorough physical examination including a complete neurological, and his eyes, nose, throat and teeth are examined by specialists.

During the first week the man is given a literacy test, the Army (Alpha or Beta) group intelligence test, a Stanford achievement test, and a Personal Data Inventory. These tests are varied from week to week, so that the men do not become "stirwise." He is given a preliminary psychiatric examination, and is interviewed by the superintendent, and assistant superintendent.

The second week he is taken on a tour of the various shops throughout the institution so that in selecting the trade he wishes to learn while in the institution he will be aware of the facilities available. During the second week he is given individual psychological tests; a battery of at least 10 standard performance tests, and where his I. Q. is under 80 (M. A. 12) by the Group Test he is given a Stanford Binet, and any other tests that may be thought advisable in order to determine whether or not he is feeble-minded. By the third week the replies to the various questionnaires sent out are usually returned. Also by this time the probation reports are in hand, and the cases that have been cleared through the social service exchanges have returned their reports. Therefore, during the third week the social history is put into shape and the record is ready for the psychiatrist to make his examination. This examination is completed during the fourth week and is written up by Friday of the fourth week. Should the review of the case justify further physical examination or a basal metabolism test an attempt is made to complete this during the fourth week so that all facts will be on hand for the classification conference held on Friday.

During these four weeks the men are given daily lectures by the various officers of the institution to acquaint them with the rules, the method of securing articles from home, writing letters, institutional discipline, military courtesy, and the process of parole and transfer. The men are given a rule book and they are required to complete the reading of this book during their stay in the receiving building. All discipline cases while in the receiving building are considered separate from the other institutional cases. During the time in the receiving building the inmate is also given his instruction in squad work so that he may take his place in the regiment when he leaves the building, as the reformatory is run on a military scheme, with drill every day. While in the receiving building the inmate has no contact with the general population, eats in a separate part of the dining room, and sits apart in all entertainments.

Since the institution of the classification clinic at the Elmira Reformatory, a conference has been held each week of the year with only one exception. On two occasions a conference was held twice in a week. Since the beginning of the clinic in October, 1931, and up to the end of May, 1933, there have been 2000 prisoners classified, so that we have averaged well over a hundred cases each month.

The clinic conference is composed of the assistant superintendent, who has charge of the assignment of the prisoner to his work in the reformatory; the disciplinarian, the director of schools, the school psychologist, the director of the trades school, the officer-in-charge of the training class or psychopathic clinic, the officer-in-charge of the receiving building, the sociologist, the social work interne, the Catholic, Protestant, and Jewish chaplains, the two psychological internes, the physician, the assistant psychiatrist, and the director of the clinic.

Almost every week one or more professional visitors sit in on the conference which is held on Friday from 9 a. m. until 5 p. m. with two hours off at noon. The average number of prisoners considered in one day has been 21. The facilities and routine of the receiving building are planned to take care of 150 men every 30 days. The prisoner's name and the charge on which he was committed is first read before the conference and his photograph is passed around the group with a graphic chart showing any infractions of the rules or abnormal behavior during the 30 days he has



been in the receiving building. The physician then reports all the physical findings. This is followed by a report from the school psychologist on the man's Stanford achievement and his recommended placement in the institutional school. The vocational director then gives a report of his opinion of the man and where he recommends the man should be placed to work. The respective chaplain then gives an opinion of the man's religious background. This is followed by a full report by one of the psychologists. The psychiatrist who has made the final examination then reads the social history and gives a summary of his psychiatric findings and suggests a diagnosis and prognosis for the case. The inmate is then called into the room, is interrogated by the other psychiatrist and by any other members of the Conference who may desire to do so. The inmate then is given a chance to ask any questions he may desire, following which he is dismissed from the room and the director of the clinic announces what he believes should be the psychiatric classification, and the administrative classification which is a prognostication. The assistant superintendent then announces where he believes the man should be assigned. If any member of the group disagrees with the statements previously made they are given ample opportunity to lodge their disagreement and the facts are fully discussed. If thought advisable, a definite statement is placed in the inmate's record which stands as a recommendation to the parole board. It has been found that it takes about 15 minutes to go through the above routine, although in special cases the discussion on an individual case has sometimes extended for almost an hour. Necessarily, extended discussion usually has to be cut short, as it would otherwise be impossible to complete the quota for the day.

When the classification conferences were first held the lay members of the group, of course, were anxious for enlightenment on various psychiatric conclusions, and more time was taken for educational purposes. At present the routine moves fairly smoothly except for an occasional dissension from the psychiatric classification. Each man is rapidly but thoroughly considered and no time is wasted in theoretical discussion.

The psychiatric classification recommended by the special committee of the American Prison Association in 1928 is adhered to,

with certain amplifications, and the prognostic or administrative classification suggested by the New York State Deputy Commissioner of Correction, V. C. Branham, in 1931, is also followed:

A. Psychiatric classification.

I. Normal—(C. A. 15 years).

1. Borderline (I. Q. 71-80).
2. Dull (I. Q. 81-90).
3. Average (I. Q. 91-110).
4. Superior (I. Q. above 110).
- a. Without physical defect.
- b. Physically handicapped.
- c. Emotionally unsettled.
- d. Socially inadequate.
- e. Habitual offender.

II. Feeble-minded—(Stanford-Binet—I. Q. under 70).

III. Neuropathic.

1. Psychopathic personality.
  - a. Organic inferiority.
  - b. Hereditary.
  - c. Sociopathic.
2. Epileptic.
3. Post-encephalitic personality.
4. Alcoholic.
5. Drug addict.
6. Psychoneurotic.
  - a. Hysterical type.
  - b. Psychasthenic type.
  - c. Neurasthenic type.
  - d. Other types.
7. Brain or nervous abnormalities without psychosis.

IV. Psychotic (Standard classification).

V. Potentially psychotic.

1. Recovered from psychosis.
2. Psychosis in remission.
3. Physical symptoms of incipient psychosis.

B. Administrative or Prognostic Classification.

- I. Temporary restricted—those who are not likely to commit another crime and who should be released as early as possible—(good prognosis).
- II. Prolonged tractable—those who will likely respond to treatment but need extended incarceration or supervision—(doubtful prognosis).
- III. Prolonged intractable—those who will not respond to any treatment, should be held indefinitely, and will undoubtedly be recidivists—(bad prognosis).

## IV. Psychiatric.

1. Hospitalization—needing transfer to state hospital.
2. Observation—Needing further study—(undiagnosed).

## V. Hospital—(psychiatric diagnosis deferred).

1. Acutely ill (physically).
2. Infirm.
3. Tubercular.

If at the time of the classification conference a prisoner is found to be incorrigible, psychotic, or potentially psychotic, or in need of further observation, and not likely to get along in the general population, he is sent the next day to the psychopathic clinic, which is a unit of 50 cells under the direction of a well-qualified senior guard. The inmate is here observed daily by one of the psychiatrists and is given the necessary training or therapy to fit him for his place in the general institutional population, or where he is held until the necessary steps can be completed for his transfer to the proper institution. If the inmate is so disturbed as to need immediate hospital treatment, he is placed in the psychiatric ward of the reformatory hospital under the supervision of one of the psychiatrists. The patient is held in this ward until he settles down or until his transfer to a state hospital is effected.

The majority of the inmates the day following the classification conference are transferred to the general reformatory population. Each man is assigned to a cell and he begins the daily institutional routine, attends school, military drill, and spends at least a half-day in his trade assignment, except week-ends. Saturday morning he has a bath, and in the afternoon there are athletic events. Sunday morning is church service, and a concert or popular lecture, and in the afternoon a movie. The morning that he leaves the clinic he is given a final talk which brings out the necessity for him to abide by the rules of the institution and also assures him of the interest of the psychiatrist in his welfare. He is told that he may at any time speak to the superintendent or to the psychiatrists if he desires personal help. We have found that from 10 to 30 inmates in the general population ask for such personal interviews every week, and each psychiatrist spends at least one full day each week in such psychotherapy.

The psychopathic clinic was established as an experiment in February, 1930, and since the establishment of the classification clinic has become a very important part of the psychiatric unit of the institution.

In the first three years of this psychopathic clinic 350 men were assigned to it, and 198 or 56.6 per cent were discharged

into the general population as "cured" or able to adjust to the prison routine. Only seven, or 3.5 per cent of these individuals had to be returned to the clinic before they finished their terms in the institution. This would be considered an exceptionally good average for any mental hospital. Although these 198 men were considered serious behavior problems when admitted to the reformatory 130 or 65.7 per cent finished their terms in the institution and have made good in the outside world. Twelve of the number have been returned for violation of parole. Of the 350 placed in the psychopathic clinic, 152 were thought to be beyond reclamation; consequently, were transferred to other institutions. Sixty-six were feeble-minded, and so were transferred to Napanoch, the state institution for the feeble-minded. Twenty-one were psychotic and so were transferred to one or the other of the mental hospitals, Matteawan or Dannemora, and 34 were transferred to state prison. During May, 1933, there were 47 inmates, or about 3.5 per cent of the whole reformatory population in the psychopathic clinic.

The following tables will give some of the findings of the classifications clinic:

Crime committed.	Percentage distribution.				Total.
	Catholic.	Protestant.	Jewish.	Others.	
Abduction .....	0.2	...	...	...	0.1
Attempt Arson, 3d.....	0.2	...	...	...	0.1
Assault, 1st .....	0.2	1.3	4.3	...	0.9
Assault, 2d .....	2.7	1.3	2.1	...	2.2
Assault, 3d .....	0.5	0.6	...	...	0.5
Burglary, 2d .....	...	2.0	...	...	0.5
Burglary, 3d .....	15.5	14.9	2.1	...	14.1
Burglary, 3d and G. L. 2d.....	0.8	2.7	...	20.0	1.4
Burglary, 3d—P. L. and Att. G. L.....	0.2	...	...	...	0.1
Burglary, 3d and Unlawful Entry.....	...	1.3	...	...	0.3
Burglary, 3d and P. L.....	3.0	4.0	...	...	3.0
Attempt Burglary, 3d.....	3.0	5.4	4.3	...	3.7
C. C. W. as Felony.....	0.2	...	...	...	0.1
C. C. W. as Misdemeanor.....	0.8	...	2.1	...	0.7
C. R. S. P.....	0.2	...	...	...	0.1
Escaping as Felony.....	0.2	0.6	...	...	0.3
Endangering Morals of Minor.....	0.2	...	2.1	...	0.3

Crime committed.	Percentage distribution.				Total.
	Catholic.	Protestant.	Jewish.	Others.	
Attempt Extortion .....	...	1.3	...	...	0.3
Felonious Assault .....	0.2	...	...	...	0.1
Fire Arms .....	0.2	...	...	...	0.1
Forgery, 2d .....	1.3	2.0	4.3	...	1.7
Attempt Forgery, 3d.....	...	0.6	4.3	...	0.5
Blackmail .....	0.2	...	...	...	0.1
Grand Larceny, 1st.....	1.1	2.0	2.1	...	1.4
Grand Larceny, 2d.....	5.8	5.4	...	...	5.1
Attempt Grand Larceny, 2d.....	3.3	...	4.3	...	2.5
Attempt Grand Larceny, 3d.....	0.2	...	...	...	0.1
G. L., 2d and Violation of Probation..	0.2	1.3	...	...	0.5
Incest .....	...	1.3	...	...	0.3
Injury to Property .....	0.2	...	...	...	0.1
Juvenile Delinquency .....	...	0.6	...	...	0.1
Leaving Scene of Accident.....	0.2	...	...	...	0.1
Manslaughter, 2d .....	0.5	0.6	...	...	0.5
Malicious Mischief .....	...	0.6	...	...	0.1
Petit Larceny .....	6.9	8.8	13.0	20.0	8.0
Poss. Burglar Tools.....	0.5	0.6	...	...	0.5
Attempt Petit Larceny.....	...	0.6	...	...	0.1
Rape, 2d .....	1.1	4.0	...	...	1.7
Attempt Rape, 1st.....	0.2	...	...	...	0.1
Rape, 1st and Assault, 2d.....	0.5	1.3	...	...	0.7
Robbery, 1st .....	3.0	3.4	4.3	...	3.2
Robbery, 2d .....	12.1	4.0	13.0	20.0	10.2
Robbery, 3d .....	11.9	6.8	10.8	40.0	10.7
Attempt Robbery, 1st.....	0.8	1.3	...	...	0.8
Attempt Robbery, 2d.....	2.2	2.0	...	...	1.9
Attempt Robbery, 3d.....	8.5	5.4	21.7	...	8.7
Robbery, 1st and G. L. 1st.....	...	0.6	...	...	0.1
Robbery, 1st and Vio. Sec. 2124.....	0.5	...	...	...	0.3
Rob., 1st; G. L., 2d and Assault, 2d....	...	...	2.1	...	0.1
Unlawful Entry .....	4.7	4.0	...	...	4.1
Attempt Unlawful Entry.....	0.5	...	2.1	...	0.5
Violation Sec. 1293 and G. L., 2d.....	0.5	...	...	...	0.3
Violation Sec. 1293 and G. L., 1st.....	0.5	...	...	...	0.3
Violation Section 1897.....	0.8	...	...	...	0.5
Violation Probation .....	0.2	4.0	...	...	1.2
Violation Sec. 20, Part 4 and P. L.....	...	0.6	...	...	0.1
Violation Section 483-A.....	0.2	...	...	...	0.1
Violation Section 1298 and P. L.....	0.2	...	...	...	0.1
Wayward Minor .....	...	0.6	...	...	0.1

## NUMBER PREVIOUS ARREST.

No.	Percentage distribution.				Total.
	Catholic.	Protestant.	Jewish.	Others.	
0.....	25.0	31.0	39.0	80.0	27.8
1.....	27.0	31.0	20.0	...	26.9
2.....	19.0	20.0	26.0	...	19.5
3.....	11.0	9.0	7.0	20.0	10.0
4.....	5.0	7.0	4.0	...	5.0
5.....	4.0	1.0	4.0	...	3.0
6.....	4.0	1.0	...	...	3.0
7.....	2.0	1.0	...	...	1.4
8.....	2.0	...	...	...	1.0
9.....	1.0	...	...	...	0.8
10 or over.....	1.0	...	...	...	0.8
Not stated.....	...	...	...	...	0.8

## AGE AT FIRST ARREST.

Age.	Percentage distribution.				Total.
	Catholic.	Protestant.	Jewish.	Others.	
10.....	3.8	0.6	4.3	..	3.0
11.....	2.7	1.3	2.1	20	2.5
12.....	5.5	4.7	2.1	..	4.0
13.....	3.6	4.7	2.1	..	3.7
14.....	9.6	4.7	6.5	..	8.0
15.....	6.3	6.8	4.3	..	6.2
16.....	12.1	8.1	4.3	..	10.3
17.....	12.7	12.9	15.1	20	13.0
18.....	15.2	14.2	10.8	20	14.6
19.....	8.5	14.2	4.3	20	9.8
20.....	8.8	8.1	13.0	20	9.0
21.....	3.3	5.4	13.0	..	4.6
22.....	2.4	2.7	10.8	..	3.2
23.....	2.4	7.4	2.1	..	3.7
24.....	1.3	2.7	4.3	..	1.9
25.....	0.5	0.6	...	..	0.5
Not stated.....	...	...	...	..	2.6



## PLACE OF BIRTH

Percentage distribution.

Birthplace.	Catholic.			Protestant.			Jewish.			Total.		
	Imm.	Fath.	Moth.	Imm.	Fath.	Moth.	Imm.	Fath.	Moth.	Imm.	Fath.	Moth.
United States .....	86.0	35.0	28.0	96.0	81.0	90.0	86.4	7.0	7.0	89.1	46.3	43.8
Norway .....	...	...	...	...	0.7	...	...	...	...	...	0.2	...
Austria .....	...	2.7	4.0	...	0.7	...	...	9.0	9.0	...	2.7	3.0
Hungary .....	...	...	1.2	...	1.4	0.7	...	...	2.4	...	0.4	1.2
England .....	...	...	0.3	0.7	2.8	1.4	4.5	...	...	0.5	0.8	0.6
Sweden .....	...	...	0.3	...	2.1	1.4	...	...	...	...	0.6	0.6
France .....	0.3	0.3	0.9	...	1.4	...	...	...	...	0.2	0.6	0.6
Germany .....	0.9	2.1	1.2	...	3.3	2.1	...	2.4	...	0.5	2.5	1.4
Greece .....	...	0.3	...	...	...	...	...	...	...	...	0.2	...
Ireland .....	2.3	5.2	8.0	...	...	0.7	...	...	...	1.5	3.3	5.2
Italy .....	6.0	36.0	36.0	1.4	0.7	...	...	...	...	4.0	22.9	22.8
Poland .....	1.7	12.5	12.4	...	...	...	...	7.2	9.0	1.1	8.5	8.9
Belgium .....	...	0.3	0.3	...	...	...	...	...	...	...	0.2	0.2
Roumania .....	...	...	...	...	...	...	...	7.2	5.0	...	0.6	0.4
Turkey .....	...	...	...	...	...	...	2.2	2.4	5.0	0.2	0.2	0.4
Russia .....	...	1.9	1.9	...	0.7	0.7	4.5	63.0	60.0	0.4	6.5	6.7
Syria .....	...	0.3	0.3	...	...	...	...	2.4	2.4	...	0.4	0.4
Scotland .....	...	...	0.3	0.7	2.1	...	...	...	...	0.2	0.6	0.2
Virgin Islands .....	0.3	...	0.3	0.7	0.7	...	...	...	...	0.4	0.2	0.2
Porto Rico .....	0.6	0.9	0.9	...	0.7	...	...	...	...	0.4	0.8	0.6
West Indies .....	...	0.3	0.3	...	...	...	...	...	...	...	0.2	0.2
Canada .....	1.4	1.9	2.2	...	1.4	1.4	2.2	...	...	1.1	1.5	1.8
Brazil .....	...	...	0.3	...	...	...	...	...	...	...	...	0.2
Portugal .....	...	...	0.3	...	...	...	...	...	...	...	...	0.2
Holland .....	...	...	...	...	...	0.7	...	...	...	...	...	0.2
China .....	...	...	...	...	...	0.7	...	...	...	0.2	...	0.2
Denmark .....	...	...	...	...	...	...	...	...	...	...	...	...
South America .....	...	...	...	0.7	...	...	...	...	...	0.2	...	...

## SCHOOL GRADES COMPLETED.

Grades.	Percentage distribution.				Total.
	Catholic.	Protestant.	Jewish.	Others.	
2.....	0.5	4.7	...	...	1.6
3.....	1.4	3.4	...	...	1.7
4.....	2.5	8.7	...	...	3.9
5.....	10.5	4.0	13.3	50.0	9.0
6.....	11.3	11.5	...	50.0	10.5
7.....	26.8	20.3	15.5	...	23.4
8.....	31.0	19.6	37.8	...	27.7
H. S.					
9.....	10.5	10.1	15.5	...	9.9
10.....	3.1	8.8	11.1	...	5.1
11.....	1.1	2.7	6.6	...	1.9
12.....	0.8	4.7	...	...	1.7
College.					
1.....	...	0.7	...	...	0.1
2.....	...	0.7	...	...	0.1
3.....	...	...	...	...	...
4.....	...	...	...	...	...
Type of school.					
Private and parochial...	34.7	1.3	...	...	22.1
Public .....	74.7	87.1	86.6	100.0	77.8
Institutional .....	34.4	26.3	22.2	50.0	30.7
Both P. S. and Inst....	43.5	31.0	15.5	50.0	37.2

## INTELLIGENCE OF REFORMATORY INMATES.

I. Q. (C. A. 15).	Army alpha.	Stanford- Binet.	Percentage distribution.			Total.
			Catho- lic.	Protes- tant.	Jewish.	
67 or less .....	23 or less	10/2 or less	10.2	14.9	4.3	11.0
68-75 .....	24-37	10/3 -11/3	10.2	9.5	10.8	10.1
76-80 .....	38-46	11/4 -12/1	12.2	5.4	4.3	9.8
81-85 .....	47-54	12/2 -12/10	4.7	2.0	2.2	3.8
86-89 .....	55-63	12/11-13/5	11.4	9.5	6.5	10.5
90-92 .....	64-69	13/6 -13/11	8.6	3.4	8.7	7.2
93-95 .....	70-79	14/0 -14/4	10.8	10.2	19.6	11.4
96-100 .....	80-89	14/5 -15/1	10.8	12.2	17.4	10.8
101-107 .....	90-106	15/2 -16/2	9.4	4.8	8.7	8.1
108-over .....	107-up	16/3 -over	7.2	21.1	13.0	11.6
Others .....	.....	.....	...	...	...	5.7

# PERCENTAGE DISTRIBUTION OF MENTAL AGES AND INTELLIGENCE QUOTIENTS BASED ON A C. A. OF 15.

## REFORMATORY INMATES.

I. Q.	M. A.	Percentage distribution.		
		Stanford-Binet.	Army alpha.	White draft army alpha.
60	9	2.8	5.4	0.1
67	10	6.8	5.5	0.5
73	11	8.4	6.8	2.6
80	12	11.3	13.4	10.3
87	13	14.2	15.4	18.6
93	14	18.9	19.4	18.4
100	15	17.1	14.4	13.9
107	16	9.8	8.5	12.3
113	17	5.5	6.4	10.4
120	18	3.8	4.4	7.8
123+	18+	...	...	4.9

## RACIAL M. A. FOR REFORMATORY.

	M. A.	I. Q.
Native White .....	13-8	91
Foreign-born White .....	13-1	87
Negro .....	12-4	82

Psychiatric classification.	Percentage distribution.				
	Catholic.	Protestant.	Jewish.	Others.	Total.
Normal .....	35.0	39.4	35.0	40.00	36.20
Feeble-minded .....	9.4	13.0	2.1	20.0	9.80
Psychopathic Personality ...	40.0	31.0	28.2	20.0	36.55
Traumatic Personality .....	.2	1.3	2.1	...	.50
Post-Encephalitis .....	1.3	2.0	...	...	1.40
Epileptic .....	.2	1.0	...	...	.30
Alcoholic .....	2.0	...	...	...	1.40
Drugs .....	.2	...	...	...	.10
Neuropathic .....	1.3	2.0	4.3	...	.80
Neurotic .....	3.0	1.3	8.6	...	2.70
Psychotic .....	.2	...	2.1	...	.30
Potentially Psychotic .....	5.0	6.0	17.3	...	6.00
Undiagnosed .....	2.2	3.0	...	...	3.95

Administrative classification.	Percentage.
Temporary .....	45.06
Prolonged Tract .....	4.60
Prolonged Int. ....	39.50
Hospitalization .....	.28
Observation .....	10.18
Acutely Ill .....	.14
T. B. ....	.14

It will be noted from the foregoing tables that most of the commitments to the reformatory are from foreign stock, and that Italy has contributed the largest number of parents with Ireland coming second. There is nevertheless a smaller percentage of Irish, Polish, Russians, Germans, Austrians and Scotch in the reformatory than there is in the state as a whole, although the reverse is the case amongst the Italians and English. It is quite natural that since the majority of the inmates come from families of Continental stock that most of them should be Catholics, although there is a higher percentage of Catholics amongst the inmates than for the state as a whole. On the other hand, a study of these inmates shows that they did not practice their religious faith very diligently. It is worthy of note that the percentage of Hebrews in the reformatory is only about one-third of that for the general population for the state.

Over one-half, or 56.3 per cent, of the new admissions were received from the counties of New York City. Ten of the most densely settled counties of the state, which represented 72.6 per cent of the total state population, committed 70.4 per cent of the first admissions.

A comparison of the crimes as committed and the indictments on which the inmates were committed to the reformatory brings out the fact that in a great many cases the inmate was indicted for a much greater offense than he actually committed, while quite a number were apparently innocent of their charge. There is little doubt that the fear of the third degree, coercion of the authorities, or bargaining with the district attorney caused many of the 93 per cent to enter a plea of guilty. Only 7 per cent were convicted by trial. Ninety and eight-tenths per cent of our commitments were for offenses against property, and far the majority of our cases were sentenced to five years or more, some of them receiving sentences up to 30 years.

A comparison of the crimes committed by the young men of the cities and the young men of the country shows that the city boys who have more chance to steal cars and to hold up individuals commit the two crimes of grand larceny and robbery most frequently, while burglary, or the entrance into a building to steal, is found in almost half of the cases from the country. Although the charge of rape is found four times as often amongst the boys from the

country as from those from the city, it is evident that sexual intercourse with girls under 18 years of age is more likely to be condoned and less likely to be reported amongst urban communities than amongst rural communities.

Our findings have brought out some very interesting results as to the intelligence levels of our inmates and shows that the average intelligence is about the same as for the general population. The intelligence of our negroes is consistently low, although we have had several cases of superior intelligence amongst negroes committed to the reformatory. Although our prisoners have been of average intelligence they have been rather lacking in education. Far the majority have only grade school education. The question of intelligence amongst boys from the country and boys from the city is interesting, as we have found that the city boys show a higher level of intelligence than the country boys. This may be explained by the fact that the country boy of high intelligence is less apt to get into trouble because of the nature of his environment than the city boy of equal intelligence.

The reformatory is supposed to receive only first offenders, but our findings have brought out the fact that many of our men on being admitted to the reformatory were recidivists, and after psychiatric examination we found that only 36 per cent of our commitments were really reformatory material. About 10 per cent should have been sent to an institution for the feebleminded. Thirty-seven per cent would not likely profit from any form of treatment given them at the reformatory.

From the administrative standpoint we felt that more than half of our commitments had a favorable prognosis. At least 40 per cent of our inmates should never be released from close supervision, as they undoubtedly would continue to be anti-social.

One of the very interesting results of our studies at the reformatory has been our findings of the relation between the results found in the language intelligence tests and the performance tests. Where there is a wide difference in the results between these two types of tests and a lack of uniform results in the performance tests, known as "psychometric scatter," we have found that the total picture indicated emotional instability. This study shows the very significant fact that the correlation between the language tests and

the performance tests in the diagnosed normal individuals has a correlation of 48, while the psychopathic group only shows a correlation of 12.

There is no doubt that the psychiatric examination of prisoners should not be confined merely to those cases of suspected frank psychosis. The routine at the Elmira Reformatory has clearly brought out the value of thoroughly studying every case routinely and has further emphasized the need of such examinations before the individual is tried and his case disposed of. Such pre-trial examinations would not only give the prisoner a much fairer consideration but would prevent many of the abuses of the so-called "plea of insanity." In some ten states as soon as an individual is declared "not guilty" because of "insanity," he is automatically committed to a state hospital to be released only after the authorities there are convinced that he is not a menace to public safety. Such a provision safeguards the community and helps displace the widespread erroneous view that psychiatry is a "way out" for the criminal. On the other hand, psychiatry has not defined clearly enough the type of cases that need continued supervision. Unfortunately the paranoiacs and dangerous psychopathic personalities are not considered "insane," and so they are frequently found in prison, and because of their intelligence and craftiness are often released in spite of their unfavorable prognosis.

Time will tell whether the psychiatric routine as carried out at the Elmira Reformatory will have a permanent effect on the institution and on the individual prisoners. There is some criticism made against the method by officers of the old school but comments generally have been favorable, and there is no doubt that the general attitude of the inmates has been improved. It has been interesting to receive the favorable comments of prisoners that have previously been in the reformatory and have returned for violation of parole. There is a lot yet to be desired, but one encouraging thing that has come as a direct or indirect result of the classification work at the reformatory and which no doubt is very closely tied up with the classification work is the reorganized school system which was instituted this last winter. The school system now attempts to fit the school to the inmate rather than the inmate to the school, and the plan of education is what is known as the Project Method in which the man is assigned to a vocation of his



choosing, and the educational work in the school is directly connected with the vocation. It can plainly be seen that this educational method serves as a form of psychotherapy.

One hesitates to venture too many suggestions in the correction field, especially since the public is not educated up to a scientific understanding of the problem of crime and where the institutional routine is pretty well stabilized on a level of minimum effort. This was a criticism that could be made whole-heartedly against our mental hospitals until relatively recently and which unfortunately can be made about many of our mental hospitals even today.

With the classification routine as outlined above, thoroughly carried out, prison cells could be reduced to a minimum. It would be a fair estimate that less than a third of the present reformatory inmates, amounting to slightly over 1400 men between the ages of 16 and 25, need to be locked in individual cells. The other two-thirds could with benefit to the prisoners themselves and at a great saving to the state be housed in dormitories. One of the greatest handicaps that stands in the way of progress in the psychiatric handling of prisoners in New York State is the regulation in the law which makes it impossible to parole an inmate when he is ready to be paroled, and which also prevents the institution from holding prisoners for an extended length of time even though they are recidivists and potentially dangerous to the community. A definite period of incarceration for a year, as the minimum time that a prisoner can be released from the reformatory undoubtedly militates against emotional stability in many cases. The system of limited and then complete parole to the community, as is now practiced in our mental hospitals, could well be instituted in our prisons. The prisoner when thought ready for parole could be given a chance to demonstrate his ability to live a social existence, and after demonstrating his ability could then be paroled and then discharged. He would not have the constant dread of punishment hanging over him, but the constant assurance that the state is interested in him and is doing everything possible to help him to be a law-abiding citizen.

Prisoners should be dealt with as mentally sick individuals who because of some physical, social, intellectual or mental handicap have been adjudged anti-social. An indefinite stay in a correctional

institution, not a penal institution, should be prescribed, and the stay in the institution should depend entirely upon the inmate's ability to get along in the outside world.

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#### DISCUSSION.

DR. WINIFRED OVERHOLSER (Boston, Mass.).—*Mr. Chairman, Ladies and Gentlemen:* We have heard an extremely interesting presentation of a topic which is particularly timely.

The work which has gone on in New York State for some years is bearing fruit. It is a well organized integration of psychiatry with prison administration, which is something which has long been needed and is proving its value even to some of the old line prison administrators. New York, of course, has been particularly fortunate in having at the head of its correctional system for a number of years a psychiatrist, so that the psychiatric point of view has infiltrated the whole machine.

In these times when we read so much about crime and economy, this is a topic which merits consideration. In this state, for example, the examination of prisoners in the county jail was abolished by the legislature this year on the grounds of economy. The great trouble, with the cost of crime is that it is concealed, and it is difficult to satisfy legislators that there is a true economy in attempting to understand the sort of material with which

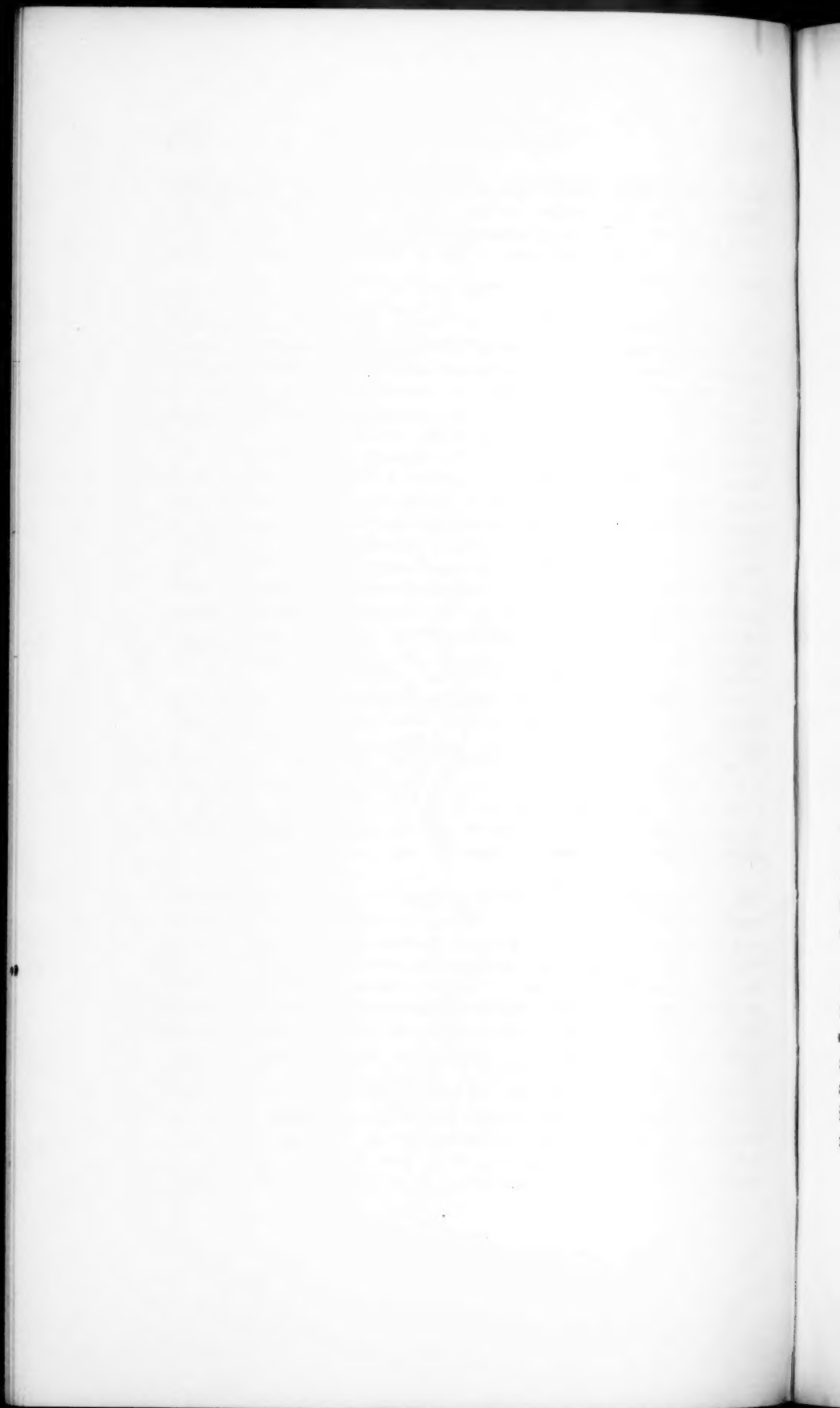
we are dealing in the correctional institutions. In the long run unquestionably New York, even though it is not spending much money on this particular work, will save to itself many, many times the cost.

I think we owe Dr. McCartney a debt of gratitude for this very interesting presentation.

DR. SANGER BROWN (Albany, N. Y.).—One particular statement which Dr. McCartney made, that is, that all of the prisoners should be examined psychiatrically and not just those who may present problems of feeble-mindedness or mental disease, is very important. In the handling of prisoners the big problem is not the disposition of the feeble-minded or the insane among them. We know what our action is pretty clearly there. It is not very difficult to diagnose these disorders. The majority of prisoners while they may not be feeble-minded or insane, present a mental complex which is comparable to insanity. Their point of view on life is so distorted and their conduct and action so far from normal that they have to be considered as belonging to a separate psychiatric group. This distortion may be permanent, or it may be slight and open to modification. I hope, therefore, that Dr. McCartney in the work in New York State will be given an opportunity from the psychiatric viewpoint to see what can be done with the prisoner. Coercion and discipline and the various general reformative measures have been shown to be rather unsatisfactory. If this psychiatric approach to the problem can be made we shall see what that can accomplish.

There is a danger in view of the various examinations which may be given prisoners from the physical, psychological, sociological and religious standpoints of becoming too diffuse. I hope in all those series of examinations that full significance of the mental examination by the psychiatrist and the sizing up of the prisoner and his personality will not be over-looked. Otherwise, it seems to me these examinations are likely to be like Hamlet, with Hamlet left out. I hope that this Association will get behind movements of this kind in prison work, because it is much needed.

DR. JAMES L. McCARTNEY (Elmira, N. Y.).—Dr. Brown states that there is danger of our routine becoming too fixed and that we may depend too much on tests. We have been criticized at times because we did not stick enough to tests. We give a large battery of tests, much larger than most institutions because we felt that it was not fair to the individual to base our conclusions on one test. Nevertheless, every inmate is also given an individual psychiatric examination. Because we have case conferences and consider every man individually, I believe that we will prevent any possibility of our routine becoming simply a sizing up test; especially since the final say-so in the conference, after all, rests on the psychiatrist. The better type of psychiatrists are filtering into the correctional institution and are taking their rightful place in the institutional routine. At Elmira Reformatory we are receiving more encouragement all the time. Our conclusions and our conferences have become well supported by the lay members of the institution.



## PHYSIOLOGICAL OBSERVATIONS DURING INTRA- VENOUS SODIUM AMYTAL MEDICATIONS.

(PRELIMINARY REPORT.)

BY W. F. LORENZ, H. H. REESE, AND ANNETTE C. WASHBURNE,  
*Madison, Wis.\**

### I. REVIEW OF CLINICAL INVESTIGATIONS.

The clinical use of sodium iso-amyl-ethyl barbiturate (sodium amytal) in the treatment of emotional states and mental disorders has been well established.

In 1930, Bleckwenn<sup>1, 2, 3</sup> introduced the intravenous application of this drug for the investigation and alteration of many neuropsychiatric conditions. "Sodium amytal will induce narcosis in the various types of excitement, benign depression and in the convulsive states, . . . and normal lucid intervals with spontaneous speech and the taking of nourishment are seen in protracted cases of catatonic schizophrenia." "Periodic narcosis breaks down the stubborn insomnia associated with the more severe psychoneuroses."<sup>1</sup> In addition, the usefulness of the drug in such conditions as "status epilepticus, acute delirium, eclampsia and tetanus" are stressed.<sup>2</sup> Bleckwenn also noted a reduction in blood pressure, together with accelerations in pulse and respirations during the injection of the drug and as a consequence felt it to be contraindicated in "advanced myocarditis or generalized arterio-sclerosis."<sup>3</sup>

Following these reports a number of other articles appeared. Epstein and Young<sup>4</sup> found sodium amytal to be of "definite benefit in the excited and restless states associated with post epileptic confusion." Lang, Beckett and Paterson<sup>5</sup> felt that "cycloid insanity can be identified by the fact that it is made worse by sodium amytal and improved by sodium rhodanate," whereas "schizoid insanity is made better by sodium amytal and worse by sodium rhodanate."

\*From The Wisconsin Psychiatric Institute, University of Wisconsin.

Miller <sup>6</sup> states, "Sodium amytal offers a new approach to otherwise inaccessible patients. It gives the psychiatrist an opportunity to unearth the structure of the psychosis and to use it psychotherapeutically in treating his patients."

Shields <sup>7</sup> agreed with this statement in her report, "this treatment (sodium amytal) . . . affords an opportunity to work with the physical and mental aspects of illness in the same patient and so fuses the two into an integrated whole."

Lindemann <sup>8</sup> confirms these observations, "in all our 30 patients we found a striking change from a resistive, seclusive attitude to a friendly and emotionally warm communication with a feeling of well being . . . the drug had no influence upon the structure of the delusional ideas and hallucinations present before the experiment. The abnormal thoughts hidden before were communicated after the drug administration. The emotional attitude under the influence of the drug was such as to allow a discussion of the reasons for fear and withdrawal from the outside world." He noted further <sup>9</sup> that early changes occurring during amytal administration consisted of "speech defects, nystagmus, disturbed eye muscle coordination, mild ataxia and the objective appearance of mild fatigue."

Palmer and Paine <sup>10</sup> reported sodium amytal to be "relatively non-toxic and offering a wide margin of safety" and added that "the greatest success with this form of treatment can be anticipated in the manic depressive group. This is directly opposed to the findings of several investigators." Further observations concerning sodium amytal and organic conditions can be found in the articles of Smith, Rogers, *et al.*,<sup>11</sup> who discussed the drug in the treatment of tetanus. Fellows,<sup>12</sup> who reported favorable mental results in paresis, recommends its use in strychnine poisoning.

## II. CRITICAL SURVEY OF CLINICAL INVESTIGATIONS.

From our observations extending over a period of nearly four years and including approximately 2500 cases, we agree in the main, with the above reports. We were not, however, able to duplicate the results of Lang, Beckett and Paterson <sup>5</sup> concerning the differentiation of the manic-depressive psychosis from schizophrenia by means of sodium amytal, and we do not believe that



cycloid states are made worse by its administration. We have on record a number of cases of cycloid states varying greatly in intensity of symptoms in which either the manic phase has been markedly tempered or the depressed phase definitely lightened following sodium amytal therapy.

We do not feel that sodium amytal is as "non-toxic," nor that it offers as wide "a margin of safety" as claimed by Palmer and Paine.<sup>10</sup> In one of our cases of delirium tremens death occurred following the administration of sodium amytal. Although this is the only mortality, we have witnessed respiratory difficulties, including irregular rhythm of respiration, transient cessation of breathing and cyanosis. In nearly all of these a check revealed that the drug had been given too rapidly (exceeding 1 cc. per minute).

We are fully in accord with the statement, "the intravenous administration of sodium amytal carries with it the potential dangers characteristic of barbituric acid derivatives . . . in addition to the risk inherent in the intravenous use of any therapeutic agent."

Finally, we believe that intravenous sodium amytal should only be administered under the conditions laid down by Bleckwenn:<sup>3</sup>

I. The patient should have no food for from 4-6 hours preceding the administration of the drug.

II. 1 gm. (15 gr.) of sodium amytal is freshly dissolved in 20 cc. of distilled water.

III. It is administered intravenously at a rate not to exceed 1 cc. per minute.

IV. The patient must always be attended by a nurse from the time of drug injection until the initial narcosis has worn off. This precaution is essential because of the dangers of aspiration should the patient vomit and further because of the depth of narcosis and possibility of suffocation.

Lorenz<sup>13</sup> in studying the problems of mental conflict developed a technique by which the various stages of desired narcosis could be reached (chemical psychoanalysis). These simulate the three accepted hypnotic levels of Forel.

We consider *stage 1* of intravenous sodium amytal hypno-narcosis as that period when the patient first is aware of unusual symptoms such as, fatigue, dizziness, blurring of vision, diplopia, light headedness, etc.

*Stage 2*, when he becomes either euphoric or drowsy and

*Stage 3*, when the corneal reflex is abolished.

For purposes of psychiatric investigation, *stage 2* is preferred because at this level (a) the undesirable rapport situation is gone; (b) the patient's inhibitions being removed, his conversation is free and unrestricted; (c) suggestive therapy is more easily assimilated; and (d) it permits questioning by others in cases of criminal nature.<sup>13</sup>

### III. PROCEDURE OF THE INVESTIGATION.

Because of the acknowledged value of intravenous sodium amytal as a therapeutic agent, we deemed it advisable to study certain of its physiological effects, our main objects being:

1. To standardize the method of administration.
2. To study the alterations of blood pressure, pulse and respiration before, during and after administration.
3. To estimate the time required to reach the various stages of hypno-narcosis.
4. To estimate the duration of sleep following narcosis.
5. To investigate drugs which (a) would possess antidotal action for sodium amytal; (b) would permit extension of the period for psychiatric investigation—prolongation being made possible by using the stimulant, first, to rouse the patient sufficiently from an undesirable deep hypno-narcosis; secondly, to retain a level of pseudo-wakefulness for analytic and therapeutic conversation.<sup>14</sup>

Accordingly, 350 neuro-psychiatric cases were selected from the State Hospital at Mendota, Wis. The group of 175 females and 175 males included:

	Cases.
Schizophrenia .....	102
Manic-depressive psychosis .....	70
Psycho-neurosis .....	60
General paresis .....	54
Drug addicts .....	20
Involuntary depression .....	16
Epilepsy .....	15
Arterio-sclerosis and senile psychosis.....	13

To obtain accurate results a uniform course of investigation was followed.

Four persons were employed. A physician (A. C. W.) administering the sodium amytal intravenously; one nurse took blood

pressure, pulse and respiration readings; one nurse was responsible for the preparation of the drugs employed and a secretary recorded the results.

The patients under study were put to bed in a quiet room. Numerous blood pressure, pulse and respiration readings were taken before the administration of sodium amytal to obtain the normal data for the individual. The history, physical and mental status, constitutional type (schizoid, paranoid, cycloid or epileptic) and diagnosis were checked.

1 gm. (15 grs.) of sodium amytal was then dissolved in 20 cc. of distilled water and administered at the rate of 1 cc. a minute.

As the patient passed through the various stages of hypnarcosis blood pressure, pulse and respiration were taken for each stage together with the time required to reach the stage and the clinical reactions recorded.

After the patient had reached the period of profound narcosis (*stage 3*) the length of his sleep from that point until complete awakening was registered.

The results obtained were recorded on uniform data sheets (Chart I).

At the conclusion of these daily experiments, covering a period of 6 months, the data were assembled and sorted according to (a) sex, (b) diagnosis. The various figures were compiled and curves plotted as follows:

Chart II demonstrates the relationship of sodium amytal to (1) disease, (2) sleep, (3) sex. It will be noted (1) that with the exception of the arterio-sclerotic group in the females the non-organic conditions such as psycho-neurosis, drug addiction, schizophrenia and manic-depressive psychosis require larger amounts of sodium amytal; (2) that sleep in most cases is proportional to the drug given; (3) that a slightly greater amount of sodium amytal is required for females than males. The average in both sex shows that 14.3 cc. of sodium amytal or approximately 9½ grains is required to produce narcosis and that the average sleep period is 3 hours and 50 minutes.

Chart III presents blood pressure, pulse, respiration and time variations in the various groups. It will be noted that on the whole the curves possess a certain uniformity although the involutional group both male and female show an unstable blood pressure

(diastolic-systolic). The male and female individuals in the arteriosclerotic group were the first to reach the third stage, whereas the schizophrenics and drugs addicts were among the last.

Chart IV shows the general average of blood pressure, pulse, respiration and time. It will be noted that the curves are fairly stabilized. From the general average of the time required to reach the various stages of hypno-narcosis, we conclude that the first is reached in slightly over 3 minutes, the second in 6 minutes and the third in 14 minutes. Below one notes the balance to within .3 of a degree, between the amount of sodium amytal used and the time of sleep.

In order to obtain information of the action of stimulating or antidotal drugs (see above) during sodium amytal narcosis 54 cases who had reached the third stage of hypno-narcosis were given as an average 5 cc. of an aqueous solution of 25 per cent coramine (15); 12 cases received caffeine benzoate  $7\frac{1}{2}$  grs. and 3 cases adrenalin (1:1000)  $\frac{1}{2}$  cc., all administered intravenously. Blood pressure, pulse, respiration and time of awakening were noted and compared with control cases selected from the same group. The results of our work are best illustrated by the following charts:

Chart V shows the effects on blood pressure, pulse and respiration of adrenalin, coramine and caffeine. The height of the arrows representing the rise or fall in these functions after the drug. With all three it is possible to bring the patient from the third to the second stage in somewhat over one minute. The use of caffeine during amytal narcosis was first reported by Bleckwenn in 1930 (15).

Chart VI represents the sleep periods. After administering the stimulant, the patient was left to himself, and no further attempt to rouse him was made. In most cases after a short period of wakefulness he went to sleep again, but it will be noted that the period of this second sleep is shorter than that of control groups who have received no stimulant.

#### CONCLUSIONS.

Observations in 350 cases permit the following deductions:

I. Sodium amytal properly prepared and administered produced no alarming physiological effects upon blood pressure, pulse and respiratory rate.

II. Approximately  $9\frac{1}{2}$  grains or 14.3 cc. of sodium amytal (15 grs. dissolved in 20 cc. distilled water) were required to obtain complete narcosis.

III. 14 minutes was the time required to reach the third stage.

IV. The functional group necessitated a somewhat larger dosage than the organic group.

V. Because of the great blood pressure instability among the involutional cases, greater caution and supervision must be observed in them.

VI. Any of the three antinarcotic stimulants employed aroused the patients in slightly over one minute, but if left to themselves the tendency was to sleep again. The sleep period thereafter was, however, shortened.

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## CHART LEGENDS.

## CHART I:

Clinical data sheet employed.

## CHART II:

Relation of sodium amytal to disease.

Sleep and sex.

G. P. = General paresis.

EPI = Epilepsy.

S = Schizophrenia.

PN = Psycho-neurosis.

INV = Involution.

M. D. = Manic depressive.

ART = Arteriosclerosis.

D = Drug Addicts.

## CHART III:

Blood pressure, pulse, respiration and time variations in the different groups.

I = Involution. (Upper curve in the female blood pressures and second curve in the male systolic pressure.)

P = Psycho-neuroses.

G = General paresis.

E = Epilepsy.

M = Manic depressives.

S = Schizophrenia.

A = Arterio-sclerosis.

D = Drug addicts.

N = Normal reading—stages of hypno narcosis are marked respectively 1-2-3.

## CHART IV:

General average in 350 cases of variations in blood pressure, pulse, respiration and the time required (minutes) to reach the various stages.

Below is a comparison check between the average amount of Amytal used to reach narcosis (14.3 c.c.) and the time (14 minutes) in which this stage was reached. Injection at the rate of 1 c.c. a minute.

## CHART V:

Effects produced on blood pressure, pulse and respiration by adrenalin, coramine and caffen after sodium amytal narcosis. Below is recorded the time (minutes) for awakening after administration of the stimulant.

## CHART VI:

To the left (sleep) are recorded (hours and minutes) the sleep periods of those patients who received stimulants after amytal narcosis had been obtained. The right sleep periods of control patients who had reached amytal narcosis but had received no stimulant.



DATE \_\_\_\_\_ DIAGNOSIS \_\_\_\_\_

NAME \_\_\_\_\_ SEX \_\_\_\_\_ AGE \_\_\_\_\_ HOOP \_\_\_\_\_ TYPE \_\_\_\_\_

I BEFORE NR. AMYTAL \_\_\_\_\_

II P. R. STATUS \_\_\_\_\_ RE. \_\_\_\_\_

III INJECTION BEGUN \_\_\_\_\_

IV AWAKE AT \_\_\_\_\_

V TOTAL C.C. AM. GIVEN \_\_\_\_\_

**V STAGES**

TIME									

W — CAF. COR. AT —

ADR.

**W STAGES**

TIME									

CHART I.

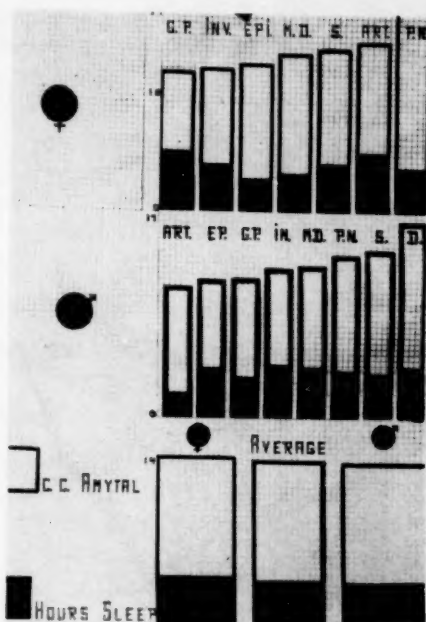


CHART II.

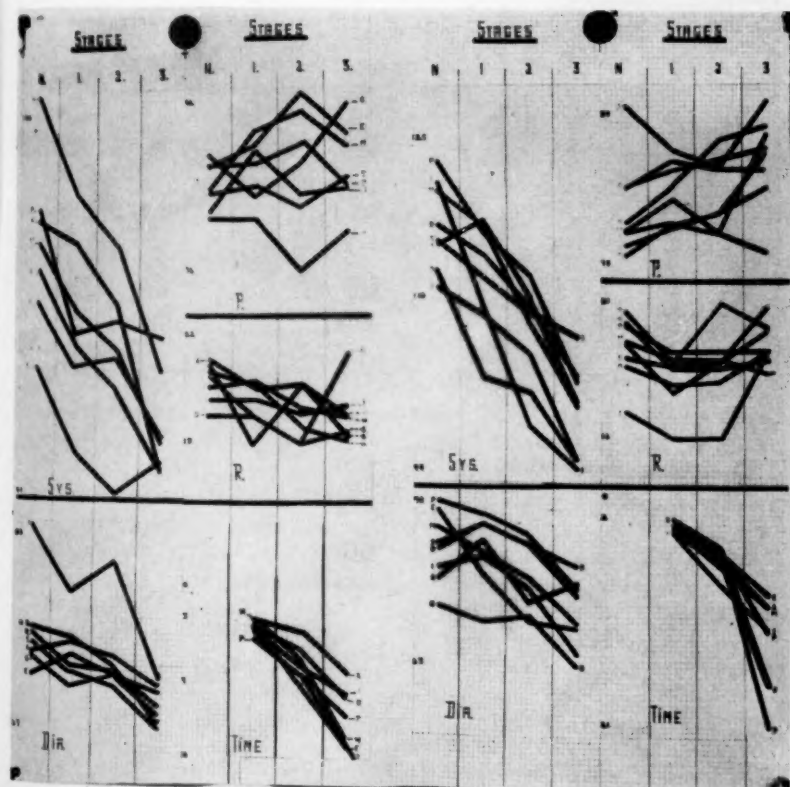


CHART III.

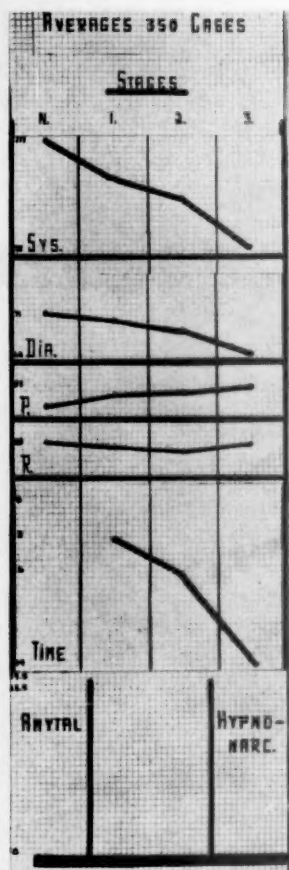


CHART IV.

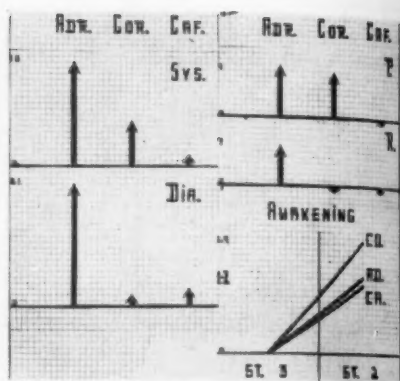


CHART V.

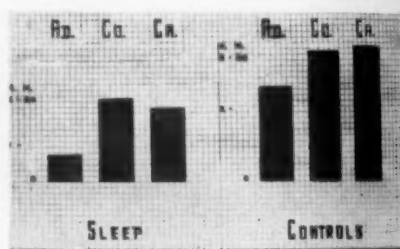


CHART VI.

## SCHIZOPHRENIC TRAITS IN THE FUNCTIONAL PSYCHOSES AND IN NORMAL INDIVIDUALS.\*

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With the concept of the "total personality" there has been a new orientation point in the study of mental disease. This concept has added additional depth to the knowledge of the etiology of the psychoses. Schizophrenia has been variously assumed as developing from a shut-in, introvertive, schizoid, and autistic personality. The extrovertive, cycloid and syntoid personality has been offered as the basis for manic-depressive psychosis. Physiological correlates for these psychological types have been offered by Kretschmer<sup>1</sup> and Hunt.<sup>2</sup>

Other observers have only partly confirmed these clinical observations. In two studies reported by Hoch<sup>3, 4</sup> only 57 per cent of the 110 schizophrenics showed a fairly clear-cut, shut-in personality, while 18 per cent presented normal personalities. Kirby<sup>5</sup> found evidence of a shut-in personality in but 50 per cent of his cases. Bond and Abbott<sup>6</sup> found that 68 per cent of the dementia præcox and 86 per cent of their manic-depressive patients possessed normal pre-psychotic personalities. The seclusive or shut-in personality was found in but 20 per cent of the dementia præcox group and in 4 per cent of the manic-depressive group. Bowman and Raymond<sup>7</sup> in their study of over two thousand cases found seclusive personalities in 54 per cent of the schizophrenics, in 33

\*From the Department of Psychology, N. Y. State Psychiatric Institute and Hospital. Parts of this paper were presented before the Inter-Hospital Conference, New York and Utica, April, 1933, and before the American Psychological Association, Chicago, September, 1933.

†Abbreviated from a Master's essay, Columbia University, 1934.

per cent of the affective disorders, and in 18 per cent of the general paretics. Normal personalities were found in 27 per cent of the schizophrenics, 35 per cent of the affective disorders, and 62 per cent of the general paretics. In a second more carefully controlled study<sup>7</sup> of 50 schizophrenics, a predominance of normal traits was found in 21 patients, and schizoid traits predominating in 13 patients. Traits directly opposed to schizoid traits were found in the remaining 12 patients. Kasanin and Rosen<sup>8</sup> in a recent study found a well-defined schizoid syndrome in only 16 per cent of the schizophrenics and in 5 per cent of the control group.

Non-schizoid personalities have also been reported in patients developing the catatonic form of dementia præcox. Fifteen of the 25 catatonics studied by Blalock<sup>9</sup> showed approximately an equal balance of introversion and extroversion. Hinsie<sup>10</sup> in a review of the studies of personalities of catatonics, concludes that "over one-third of the patients who develop the catatonic form of dementia præcox arise from personalities that cannot be designated as shut-in or introverted or schizoid."

Marked extroverted or cycloid personalities have likewise been found wanting in manic-depressive patients. Bond and Partridge<sup>11</sup> were unable to find any personality "syndrome" present in their 40 manic-depressives. Hoch<sup>12</sup> in a study of 218 manic-depressive patients reported that about 44 per cent presented exaggerated emotional traits. Amsden<sup>13</sup> found that those developing affective disorders were more frank than those developing schizophrenia. Bond<sup>14</sup> found a normal personality in 93 per cent of his manic-depressive and in only 29 per cent of his dementia præcox patients. In a study of 100 manic-depressives Strecker<sup>15</sup> reported a schizoid personality in 5 per cent and a cycloid personality in 76 per cent of the cases.

To circumvent some of the numerous uncontrolled factors that attend studies based on case histories and interviews, several psychologists have attempted to attack the problem of the relation of the personality to the psychosis by means of standardized questionnaires. Using a modification of the Neyman-Kohlstedt<sup>16</sup> test of introversion-extroversion Gilliland and Morgan<sup>17</sup> found that the test tended to differentiate schizophrenics from manic-depressives but failed to distinguish normals from psychotics. Campbell<sup>18</sup> working with a small number of subjects found a tendency for

dementia præcox patients to be more introverted than manic-depressives, on the Heidebreder scale. A similar tendency was found by De Angelis<sup>19</sup> who used the Bernreuter Personality Inventory. Contrary results have been obtained by Smith.<sup>20</sup> Using the Thurstone Neurotic Inventory (which is held by its authors<sup>21</sup> to be more of a test of introversion than extroversion), Smith found that the manic-depressives reported an average of over 20 per cent more neurotic traits than did the schizophrenics.

#### PRESENT STUDY.

The diversity of opinion as shown by our review of the literature gave us the impression that further investigation would be profitable. To this end we chose to study by the questionnaire method the rather well agreed upon schizoid syndrome, and have centered our attention on the following problems:

1. The compilation of a reliable and valid list of schizoid traits.
2. The relative number of schizoid traits reported by schizophrenic and manic-depressive patients, and normal individuals.
3. The relative occurrence of specific schizoid traits among schizophrenics, manic-depressives, and normal individuals.

#### SELECTION OF TRAITS.

From a survey of psychiatric literature a list of 100 commonly accepted schizophrenic symptoms and traits were selected. This list was then submitted to two well-qualified psychiatrists who were requested to eliminate all those traits which in their opinion were not particularly typical of schizophrenia. In this way the number of critical questions was reduced to 54. This revised list was subsequently submitted to 10 psychiatrists who were similarly instructed. In this way 50 traits were obtained, each of which was held by at least 80 per cent of the psychiatrists to be a schizoid trait. These traits were put into a questionnaire form in such a way as to permit a "Yes," "No," or "?" response. (See Appendix I.)

The questionnaire was given to 125 schizophrenic patients, 100 manic-depressive patients, and 240 normal individuals. The psychotic patients were obtained from the New York Psychiatric Institute, Manhattan State Hospital, Utica State Hospital, and Marcy State Hospital. In order to secure a normal group that would be comparable to the psychotic group in intelligence and

social status, we recruited most of our normal subjects from office clerks, porters, janitors, Y. M. C. A. lecture groups, cooking classes, stenographers, and college students. In general the normals filled out the questionnaire by themselves while the psychotic individuals were tested individually on the wards, and the responses recorded by the examiner.

#### QUALITATIVE RESULTS.

The two psychotic groups reacted quite differently. Many of the manic-depressives showed a keen interest in the testing. They often inquired in a frank, open way as to the purpose and significance of the questions. Responses were given promptly and decisively.

The schizophrenics displayed but a mild interest. On those occasions when they questioned the experimenter as to the purpose of the testing, they were apprehensive. They feared that what they said would be held against them. Their responses were characterized by hesitancy. Frequently they reversed their judgments. Long after a question had been answered they would ask to have the question re-read. They were guarded and suspicious in their attitude.

#### QUANTITATIVE RESULTS.

We may compare the three groups in two ways. First, on the basis of the average number of schizophrenic traits reported by each group; and second, as to the relative per cent of each group reporting each specific trait. In both cases the method of scoring was identical. Each question answered schizophrenically was counted (1) and each question "?" was counted ( $\frac{1}{2}$ ). The assigning of "half" value to "?" statements was based on our finding that the subjects tended to use the "?" response to depict those traits which they experienced occasionally. Written and verbal directions encouraged this interpretation. Traits answered non-schizophrenically were not considered. The score was the number of traits answered schizophrenically.

A brief summary of the relative number of schizophrenic traits found in each group is given in Table I. We notice that there is relatively but little difference as to the number of schizophrenic traits reported by the three groups. Considering the mean scores the manic-depressives report on the average about 4 less schizophrenic traits than the normals and schizophrenics who report



about an equal number. A similar tendency is noticed in the case of median scores. We must, however, be cautious in interpreting these gross average scores which entirely blanket group differences

TABLE 1.

THE RELATIVE OCCURRENCE OF THE 50 SCHIZOPHRENIC TRAITS IN THE THREE GROUPS.

Group.	N.	Mean.	Median.	S. D.
Manic-depressive .....	100	14.00	13.57	7.35
Schizophrenic .....	125	17.60	16.83	7.50
Normal .....	240	18.00	17.47	6.35

with respect to the individual traits. The test treated as a whole, points to the existence of a strong similarity between the schizophrenic and normal groups. As we shall subsequently see, analysis

TABLE 2.

RELIABILITY OF DIFFERENCES IN MEAN SCORES.

Groups.	D/sigma diff.	Chances in 100.
Manic-depressive and normal.....	4.73	100
Manic-depressive and schizophrenic.....	3.61	100
Schizophrenic and normal.....	.51	69

of individual items points to a strong similarity existing between the schizophrenic and manic-depressive groups.

As pointed out in Table 2, the lower score made by the manic-depressive patients as compared with the other two groups is com-

TABLE 3.

RELATIVE OCCURRENCE OF SCHIZOPHRENIC TRAITS, WITH " ? " STATEMENTS OMITTED.

Groups.	Mean score.
Manic-depressive .....	13.00
Normal .....	15.45
Schizophrenic .....	15.95

pletely reliable. The difference in mean score between the normal and schizophrenic groups is not significant.

If we drop out all " ? " statements (Table 3) we find that the relative interrelation between our three groups remains unchanged.

Since some of our groups contained more females than other groups we made a study of sex differences and found that although there was a tendency for females to report more schizoid traits, in no case did they report a statistically reliable greater number of them.

Since, in spite of the highly selected traits studied, we find but little difference in the average number of traits reported by each group, must we infer that the so-called schizophrenic traits are not peculiar to schizophrenics but are equally typical of the population at large? Before we can make this inference, we must determine whether or not some of the individual traits are more characteristic of the schizophrenics than of the other groups. Although the three groups may have the same number of schizophrenic traits, the important factor is whether they have the same traits. It is consequently necessary to compare the relative frequency with which each individual trait is reported by each group. We have approached this problem by finding the per cent of each group that returned schizophrenic answers to the various questions and then calculating the reliability of the differences in the percentages found. Our work was considerably simplified by the use of the Edgerton and Paterson<sup>22</sup> tables which give the reliability of the differences between two percentages for varying numbers of cases. For groups of our size, a difference between two groups of over 15 per cent was found to be reliable, *i. e.*, to yield a  $D/\sigma$  diff. of at least three.

A summary of the per cent of each group reporting each schizophrenic trait is presented in Appendix I. Two factors are outstanding; (1) the general similarity of the three groups and (2) the somewhat greater similarity existing between the two psychotic groups when compared with the normal group.

With regard to the general similarity existing between the groups, we note that those traits reported by a large or small per cent of one group are reported by a large or small per cent respectively by the other groups. Only 14 of the 50 traits are reported reliably more frequently by one group as compared with either of the other two groups. Nineteen additional traits are reported somewhat more frequently ( $D/\sigma$  diff. being at least 2.17) and 17 traits (traits 1 to 17 in Appendix I) are about equally characteristic of all three groups.

Comparing one group with another, we find that the schizophrenics report only the first 5 traits listed below reliably more frequently than the normals. The remaining 6 traits have 99 per cent chance of being more characteristic of schizophrenics.

*Schizophrenic more frequently than normal:*

1. Believe people are after them.
2. Hear voices that other people cannot hear.
3. Prefer a quiet home life to an adventurous life.
4. Feel that life is a dream.
5. Feel physically inferior to friends.
6. Feel misunderstood.
7. Feel nervous in the presence of the opposite sex.
8. Are troubled with religious matters.
9. Are poor losers.
10. Feel lonely even with friends.
11. Feel mentally inferior to friends.

Our comparison of the two psychotic groups revealed rather interesting results. As we might expect from the personality type theories, the manic-depressive group failed to report a single schizophrenic trait reliably more frequently than the schizophrenics. The latter, however, reported traits 1 through 4 (below) reliably more frequently, and traits 5 through 8 considerably (99 chances out of 100) more frequently.

*Schizophrenic more frequently than manic-depressive:*

1. Believe people are after them.
2. Feel that life is a dream.
3. Hear voices that other people cannot hear.
4. Are fussy about food.
5. Enjoy being alone.
6. Are poor losers.
7. Desire to change the order of the world.
8. Desire to have but few friends.

Combining, we find that the schizophrenics tend to be distinguished from the normals and manic-depressives by more frequently admitting the possession of the following traits:

*Schizophrenic more frequently than either normal or manic-depressive:*

1. Believe that people are after them.
2. Hear voices that other people cannot hear.
3. Feel that life is a dream.
4. Feel nervous in the presence of the opposite sex.
5. Are poor losers.

In the above item analysis we notice that the schizophrenics tend to resemble the manic-depressives more than they do the normals. By our criterion, they report only eight differentiating traits when compared with the manic-depressives and eleven differentiating traits when compared with the normals.

The manic-depressive group reported only one schizophrenic trait (prefer a quiet home life to an adventurous life), reliably more frequently than the normal group. The normal group, on the other hand reported the traits 1 to 9 below reliably more frequently and traits 9 through 18 considerably (99 chances in 100) more frequently.

*Normal more frequently than manic-depressive:*

1. Are critical of others.
2. Think it possible for other people to influence their actions.
3. Desire to change the order of the world.
4. Are often occupied with their own thoughts.
5. Day dream a lot.
6. Enjoy being alone.
7. Are not tactful.
8. Feel compelled to do certain things.
9. Have little faith in human nature.
10. Dislike to have their faults revealed.
11. Find it difficult to make decisions.
12. Worry excessively over humiliating experiences.
13. Are touchy on various subjects.
14. Are often absent minded.
15. Are fussy about food.
16. Have feelings of inferiority.
17. Can read other people's thoughts.
18. Do things without knowing why they do them.

One of the most cogent points brought out by this study is the finding that many accepted schizophrenic traits are given more frequently by the normal individual than by the schizophrenic. Of the following eleven traits, the first three are reported reliably more frequently by the normal group, while the chances are 99 in 100 or better that the remaining eight traits are more typical of normals than of schizophrenics.

*Normal more frequently than schizophrenic:*

1. Are critical of others.
2. Emotions change frequently without cause.
3. Think it possible for other people to influence their actions.
4. Are often occupied with their own thoughts.

5. Are sensitive to criticism.
6. Have but little faith in human nature.
7. Find it difficult to make decisions.
8. Are not tactful.
9. Are reserved and untalkative.
10. Day dream a lot.
11. Have feelings of inferiority.

The above list shows that more frequent occurrence of certain traits in a psychotic group does not mean that such traits are unique to that group. The same traits may be found, as we have shown, even with greater frequency in a normal group. In other words, inventories of psychotic symptoms must be validated by the use of a control group.

As compared with the combined psychotic groups, the normal group possesses the following traits to a greater extent.

*Normal more frequent than either schizophrenic or manic-depressive:*

1. Are critical of others.
2. Think it possible for other people to influence their actions.
3. Are often occupied with their own thoughts.
4. Are not tactful.
5. Day dream a lot.
6. Have but little faith in human nature.
7. Find it difficult to make decisions.
8. Have feelings of inferiority.

Summarized, the inter-relation between the three groups on the basis of item analysis appears to be as follows:

1. Each group tends to have the same schizophrenic traits to an equal degree. Only 14 of the total 50 traits are reliably more characteristic of one group than another.

2. The greatest divergence in personality make-up exists between the schizophrenics and normals. Each group reports 11 traits considerably more frequently than the other, making a total of 22 differentiating traits. On the same basis the normals and manic-depressives show a total of 19 differentiating traits.

3. Only eight traits in our list were found to be of differential value between schizophrenics and manic-depressives.

We notice that this inter-relation between the three groups is directly opposed to the inter-relation which we found between the three groups when compared as to the average number of schizophrenic traits reported. In the average score comparison, the normal and schizophrenic groups resembled each other and were

both separated from the manic-depressive group. In the item analysis comparison, the schizophrenic and manic-depressive groups resembled each other and were both separated from the normal group. This peculiar reversal of relationship indicates that the schizophrenics and manic-depressives resemble each other with respect to specific kind of traits possessed.

In studies of this nature, the tacit assumption is usually made that an individual's personality is tantamount to the sum of his traits. Gestalt psychologists, however, have vigorously and effectively demonstrated the fact that the psychological whole is not equal to the sum of its parts. Not only is the whole independent of its parts but the parts are not dependent on the whole. If we take three short lines and place them in a certain pattern they represent a triangle; the same lines in another pattern form a straight line; or the letters A, F, H, K, L, N, T, or Y, or an arrow head, or a cross, or a chair. *The important thing is the organization or inter-relationship of the parts. In like fashion, we may conceive of personality as an organized whole rather than a mere sum of traits.* According to this view two individuals may have identically the same traits and still have markedly different personalities due to the different configurations of patterns which their personality traits form. This interpretation provides a plausible explanation for the lack of agreement existing between clinical observers of personality and the findings of experimental workers.

#### SUMMARY.

A questionnaire consisting of 50 typical schizophrenic behavior traits, as determined by a consensus of psychiatric opinion, was given to 100 manic-depressives, 125 schizophrenics, and 240 normal individuals. From the data collected, the following conclusions are offered:

1. The normal and schizophrenic groups possess on the average about the same number of schizophrenic traits. The former report 18 such traits and the latter 17.60 traits. The manic-depressive group, on the other hand, report only 14 such traits or about 80 per cent as many as the other two groups.
2. Analysis of individual traits fails to reveal a dichotomy of personality types underlying schizophrenic and manic-depressive



patients. There is some indication that normal individuals possess somewhat different traits than psychotic individuals, but in general, all groups tend to have the same personality traits.

3. The lack of agreement between clinical observers of personality types and experimental workers is perhaps due to the fact that the former have interpreted personality as an organized whole or a gestalt, whereas the latter have interpreted personality as a sum of traits.

4. This analysis, by means of the questionnaire method, of the hypothesis that the "total personality" is basic in the development of the disease syndrome, indicates that either the questionnaire method is not a valid way to check the hypothesis or that the hypothesis is incorrect. Further work is under way which may determine more satisfactorily the validity of the concept of the total personality.

#### APPENDIX I.

We have listed below the questionnaire used in this study. Due to lack of space, we have omitted the "Yes," "No," and "?" which preceded each question and merely put in the schizophrenic answer before each question. The figure given at the left represents the per cent of each group answering each question schizophrenically. N represents the normal group, S the schizophrenic and M the manic-depressive group.

*Directions.*—The following statements describe the behavior of many people. After reading each statement, if you feel that the statement describes your behavior, encircle the "Yes"; if it does not describe your behavior then encircle the "No". In case you are undecided, encircle the "?".

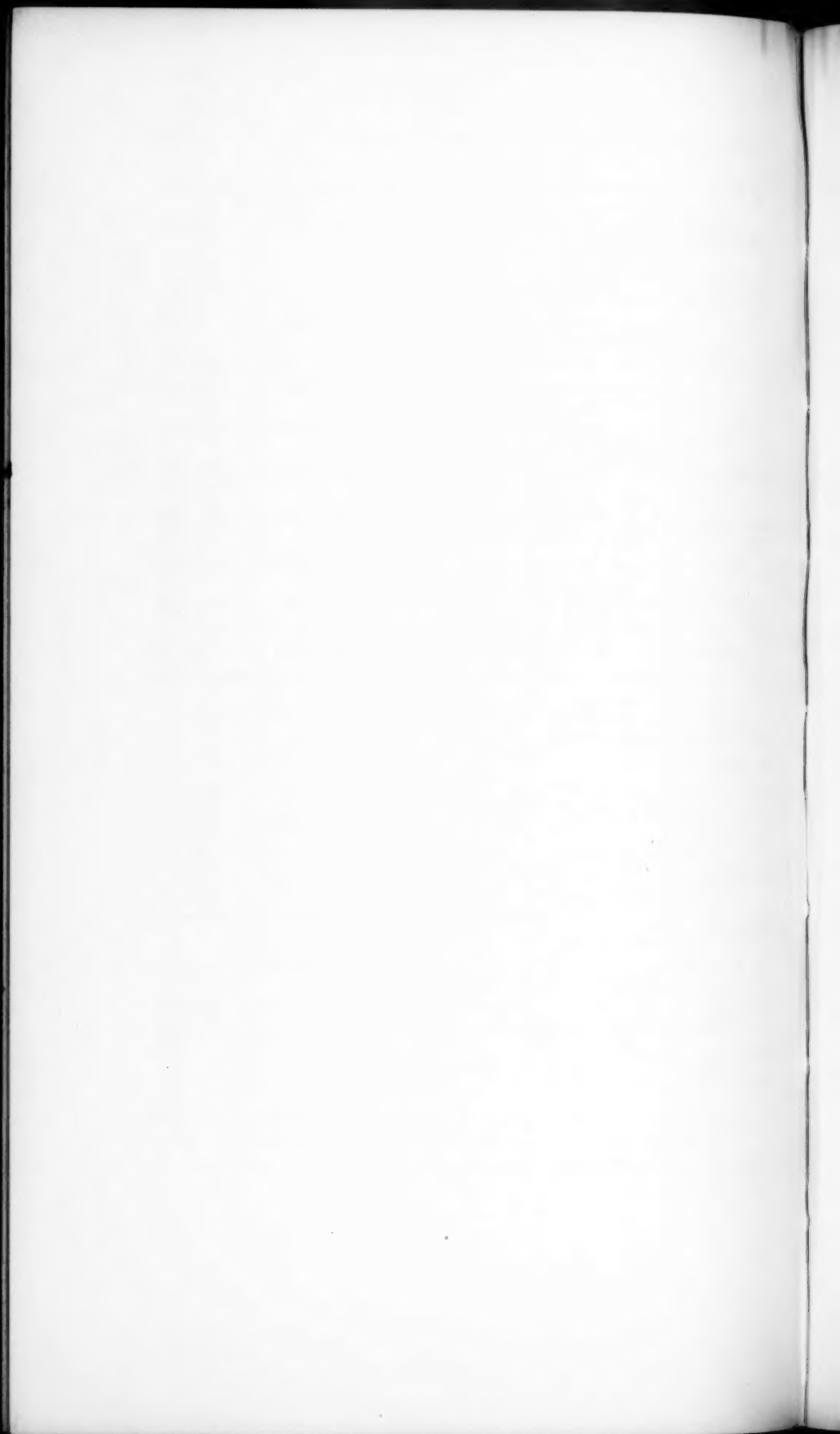
%N.	%S.	%M.	Schizoid answer.	
31	41	39	No	Prefer group sports to taking walks alone.
41	46	41	Yes	Have a limited range of interests.
41	32	33	Yes	Find it difficult to concentrate.
32	39	32	Yes	Feel different from other people.
32	26	23	Yes	Worry excessively over unimportant details.
35	46	35	No	Blame yourself for your misfortunes.
15	22	16	No	Mind is generally clear.
31	31	26	Yes	Are emotionally disturbed for long periods.
38	29	29	Yes	Are easily confused and embarrassed.
42	40	32	Yes	See things that other people cannot see.
8	8	4	Yes	Have thoughts of doing violence to members of your family.

%N.	%S.	%M.	Schizoid answer.	
25	28	23	Yes	Are indifferent towards the world in general.
44	40	38	Yes	Are often in conflict with your environment.
22	22	19	No	Take pride in your physical appearance.
65	58	52	No	Tend to be carefree rather than serious minded.
28	35	26	Yes	Are shy and timid.
18	23	18	Yes	Have feelings of guilt or sinfulness.
48	34	32	No	Find it easy to make decisions.
19	30	16	No	Are a good loser.
55	46	39	Yes	Worry excessively over humiliating experiences.
72	58	61	Yes	Are sensitive to criticism.
33	26	13	Yes	Desire to change the order of the world.
84	70	65	Yes	Often occupied with your own thoughts.
48	50	32	Yes	Enjoy being alone.
5	30	8	Yes	Believe people are after you.
58	39	34	Yes	Think it possible for other people to influence your actions.
47	33	29	No	Are very tactful.
47	71	70	No	Prefer an adventurous life to a quiet home life.
16	31	25	Yes	Feel physically inferior to friends.
25	29	16	No	Desire to have lots of friends.
35	22	20	No	Have lots of faith in human nature.
10	37	15	Yes	Feel that life is a dream.
48	36	35	Yes	Have feelings of inferiority.
18	30	19	Yes	Feel nervous in the presence of the opposite sex.
65	39	29	Yes	Are critical of others.
43	31	25	Yes	Day dream a lot.
30	38	18	Yes	Are fussy about food.
48	42	32	Yes	Dislike to have your faults revealed.
50	46	32	Yes	Feel compelled to do certain things.
38	33	26	Yes	Can read other people's thoughts.
43	25	32	Yes	Emotions change frequently without cause.
16	26	23	Yes	Feel mentally inferior to friends.
76	64	68	No	Are talkative and unreserved.
37	29	23	Yes	Are often absentminded.
10	20	14	Yes	Troubled with religious matters.
24	38	29	Yes	Feel misunderstood.
5	26	9	Yes	Hear voices that other people cannot hear.
21	32	25	Yes	Feel lonely even when with people.
34	26	22	Yes	Do things without knowing why you do them.
60	51	44	Yes	Are touchy on various subjects.

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## A STUDY IN PSYCHOBIOLOGY.\*

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Life has been so interpreted in the past that the distinct and rather mutually exclusive concepts, "mental" and "physical" could hardly be avoided. Furthermore, we are surrounded by machines and thus unknowingly acquire a mechanistic philosophy of life which serves us poorly in disentangling the relation of cause and effect as they apply to human problems. Until recent years medical training has tended to emphasize the somatic so that the body has been regarded not only as the *raison d'être*, but the cause of other aspects of life as well. Distinct terminology has grown up about this artificial dichotomy. Nothing could be farther from nature's array of facts. Psychobiology, a term used by Bernheim,<sup>1</sup> seems a happy one under which to integrate the divorced elements of life. Adolf Meyer<sup>2</sup> deserves most credit for elaborating this psychobiologic concept.

In the third trimester of the first year, students of the Albany Medical College are given seven lectures devoted to psychobiology. It is felt to be a propitious time for introducing this subject inasmuch as it comes at the end of a year of intense devotion to organization and function. Stress is placed on the fact that the living person functions not only as a colony of individual parts but also emphatically as a whole. The material is presented from the standpoint of problems, events, and dominant attributes or tendencies that appear in life from beginning to end. Broad latitude for discussion is permissible under the title, and objectivity is an aim in the course.

\*Read at the eighty-ninth annual meeting of The American Psychiatric Association, Boston, Mass., May 30-June 2, 1933.

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In the beginning, the old problem of heredity and environment is discussed. Valuable suggestions are gleaned from Jennings'<sup>3</sup> "Biological Basis of Human Nature." Each student develops a chart of his own hereditary background, including personal attributes of progenitors and collaterals. Such factors as their energy, predominant mood or emotional state, and prevailing intellectual preoccupation, are charted in so far as is reasonably possible. If the students learn that hereditary transmission is not a perfect and stable fusion of parental qualities, something is accomplished.

The second lecture, devoted to the prenatal and birth periods, emphasizes the great significance of this early developmental stage. When one realizes that the foundation of the nervous system is laid in the first few weeks of embryonic life<sup>4</sup> and requires specialized chemical substances for its growth, it is not a big step for the imagination to envisage ways by which the quality of brain and nervous system may be affected. Maurer and Tsai,<sup>5</sup> in a series of interesting experiments, have shown that young rats, nursing mothers, fed a diet greatly deficient in vitamin B, required about twice the time to learn a given maze than was required of normal control rats. Stockard<sup>6</sup> and others have demonstrated a variety of conditions that may change the morphologic character of an embryo. It is only reasonable to presume that under such conditions behavior and adaptation might be altered as well. Dandy<sup>7</sup> has demonstrated on dogs that injury to the motor cortex lowers the threshold for the production of convulsions by convulsant poisons. Convulsions and other psychobiologic defects emphasize the importance of trauma at any point in life, especially at birth.

In the developmental period up to school age the work of Gesell<sup>8</sup> is followed closely, bringing out the growth of language, coordination, stimulus-responses, and social development. Piaget<sup>9</sup> gives excellent examples of the evolution of the child's reason. Especial attention is devoted to attitude formation in its relation to subsequent respect for authority and the rights of others. The earliest manifestations of psychopathology emerging from disordered home life are accorded careful analysis.

In the lecture dealing with problems of later childhood, puberty and youth, Hall's<sup>10</sup> discussions of adolescence continue to be stimulating. Particular attention is given to the evolution of the repro-



ductive urges with their associated impulses, in many cases poorly understood. Williams <sup>11</sup> ably discusses the more wholesome outlets for growth and expansion to the ultimate goal of proper emancipation and socialization.

One lecture is devoted to problems of the reproductive period. Factors related to mating are studied. Thought, emotion, mood, and activity allied to this stage in life are discussed. Social, personal, economic, occupational, moral and religious problems are reviewed. Intrafamily attitudes and their effect on individuals are of outstanding interest.

Another period is devoted to problems of the declining years. The tendency for the zest of life to ebb becomes apparent; psychological flexibility may be impaired. The waning of interest, the alteration of memory, the diminishing of energy, and the wearing out of the body not only necessitate a variety of adaptations but make such adaptations more difficult.

Two lectures are devoted to a study of personal make-up. Nothing is so essential to the complete understanding of a person with a disease as the knowledge of the individual's nature before he became ill. There are somatic, emotional, intellectual, and social attributes which are fairly stable and we come to be known by them. The personality outlines of Amsden <sup>12</sup> and Kirby <sup>13</sup> are studied. Troublesome as well as helpful personality attributes are enumerated. Each student attempts to describe his own essential make-up.

An autobiography is a requirement of this course. In this the student pays particular attention to his own individual problems and describes methods directed toward solving them. Interesting aspects of personality, and experiences not necessarily problems, are included. These autobiographies, 74 in number, form the basis of the remainder of this study.

Most of the students are college graduates ranging in age between 22 and 25, selected by personal interview on the basis of scholarship and other desirable qualities. There were two women in the group.

The autobiographies were carefully reviewed and the essential facts in them were summarized. Only two of these young people

recorded no problems in their autobiographies. A sample summary is presented.

Student III.

- (a) Cried much of the time, from birth to 2nd year of age.
- (b) Strong fear of darkness from the age of 3.
- (c) Intense dislike of school from the 6th year.
- (d) Brooded over knowledge of how he came into the world at 12 years of age.
- (e) Annoying shyness, from 12th to 18th year of age.
- (f) Brooded over death of father, from 12th to 15th year of age.
- (g) Masturbation with much shame, from 14th to 16th year.
- (h) Curbing of sexual passion, from 18th year.
- (i) Homesickness in college, from 18th year.

Classification of this great variety of interesting biographical material has proved difficult. Life was arbitrarily divided into four-year intervals. Space permits the data of only two such periods. The actual language used by the student is recorded as much as possible.

CLASSIFICATION OF AUTOBIOGRAPHICAL DATA.

4th to 8th years:

	In- stances.
<i>Sensitive about</i> : being with people (worked to avoid them); the appearance of his clothing; motives of others; class distinctions; dishonesty; weak sphincters; small size; having people see him do school work at home—did it under bed; about being called "sissy".....	15
<i>School</i> : dislike of; bored by; hatred of singing in; difficulty in learning to read; worry over lessons; misunderstood by teacher; fear of; homesickness in; enuresis attributed to stern teacher .....	12
<i>Feared</i> : darkness and old people; teacher; sick father; policemen; punishment in school; ghosts (mother read ghost stories); operations and ether.....	7
<i>Unhappy</i> : about lack of father's sympathy; about lack of opportunity to play; over quarrels with brother over trifles; without mother's protection; lonely after death of father....	6
<i>Health</i> : delicate—mother treated as if ill; physical inferiority; delirious with minor illnesses.....	5
<i>Diseases and Traumata</i> : deep burn with pain and delirium; injury induced interest in medicine; severe illnesses; discouraged with protracted diarrhoea.....	4
<i>Sleep</i> : severe nightmares; sleep-walking.....	3
<i>Restlessness</i> .....	2

*Miscellaneous*: daydreaming; day dreams of strength and heroic deeds; shame from being approached by another boy sexually; stealing; tantrums; deep affection for his own pets; love of animals; resistance in changing from natural left-handedness to right; difficulty in ignoring image of one eye that had external strabismus; wished that he were an animal; frequently threatened by mother..... 1 each

*16th to 20th years*:

*School*: failure in third year of college; failure in sports; failure in a college subject; failure to acquire adequate methods of study; dislike of college; worry over poor showing in first year of college; unable to carry college course; failure in first year of college; failure in regents' examination.....16

*Thwarted by*: homesickness; family irritations; financial worries; procastination; death of mother and father; failure to develop literary talent which deflected toward the study of medicine; uncongenial work which caused him to develop radical ideas; being kept too close to mother; lack of emancipation from home.....16

*Sensitive about*: slowness in making friends; red face; inadequacy on entering college; unhappy home; being out of tune with intimates; making social contacts; ridicule; immaturity..... 8

*Interest in Opposite Sex*: failure in college due to love affair; concerned about being in love with a cousin; completely absorbed by love affair; affair with girl that looked like mother; disappointment in love; difficulty in curbing sexual passions; sex relations followed by intense disgust with self and girl; inadequacy with opposite sex..... 8

*Unhappy over*: seclusiveness; feeling of insecurity; depressed and suicidal, with a feeling that everything was against him; shyness in college; short periods of intense sadness; feelings of insecurity on entering college; shyness (overcome by alcohol) ..... 7

*Fears*: of sophomores in college; of blood poisoning from leg infection; vague fear of death..... 3

*Religion*: religious discontent; doubted the existence of God.... 2

*Restlessness* ..... 1

*Miscellaneous*: overbearing egotism; conceit; worry over unrepaired hernia; intense urge to tip in restaurants and barber shops; disgusted with monotony of manual job; much interest in philosophy; ulcers of stomach; career determined by removal of appendix..... 1 each

## DISCUSSION.

In reviewing the autobiographies of these students one is impressed by the fact that, except for the help of parents or close associates, some of the problems in the earlier years would have passed unknown to them. Furthermore, earlier experiences which were regarded as merely interesting phases of life at the time, from the vantage point of more maturity are regarded as origins of subsequent problems. This may be the most logical approach to the genesis of the "unconscious."

This collection of psychobiological data from relatively normal young people (1) suggests the most intimate approach to the teaching of such aspects of psychiatry as may be of greatest help to the general practitioner; and (2) affords a means of getting better acquainted with students. In the age period from birth to 12 years the problems are among those found in any child guidance clinic. The family deserves more study as an environmental influence than it has received in the past. In these early years one is doubtless at the crossroads of personality formation.

The maladjustment to school which these young people experienced is noteworthy from an educational standpoint, especially in view of the fact that with but rare exceptions all were graduated from college subsequently. There are frequent expressions of the acquisition of poor methods of study in high school and college.

Many of the students possessed the sensitiveness of the schizophrenic, or the unhappiness of patients with affective disorders; while some were troubled by fears, compulsions, and obsessions. Furthermore, conditionings in the direction of poor health, without adequate basis, form a possible hazard of no mean importance. The evolution of sexual impulses was most interesting. Not all who reported sexual reactions regarded them as problems, but the conditionings of this impulse with fear, guilt, and other deleterious emotions and affects should suggest a more wholesome hygiene.

One is impressed by the fundamental lack of healthy normal control standards in psychiatric practice. This material affords an interesting accumulation of facts from essentially normal individuals which may prove useful for comparison with similar data from those less able to get on in the world. Doubtless these students failed to reveal some of their vital problems because they are

unable to evaluate their significance. At the same time it is apparent that conditions which were troublesome to one student were not so to another. This material, available to future classes in psychobiology, will doubtless be helpful in generating an objective understanding of the nature of life's transitions.

One may ask how the potentially hazardous factors have been overcome. In the first place, these students have lived somewhat less than half of life's expectancy and the nature of their adaptation in the future is uncertain. Secondly, such hazardous factors are offset by outstanding qualities, such as energy, enthusiasm, and persistence, which tend to harmonize and unify the whole. Environment has been favorable in the lives of not a few. The manner in which seclusiveness has been controlled, restlessness curbed, and strong emotion made useful is an aspect of psychobiologic orientation which deserves more consideration.

We feel that we have merely started on an interesting venture. To follow these students and correlate these data with life should prove most valuable. We have already learned that the students having had the most problems are not the ones most likely to fail in medical college. It may be true that those who record only a few adaptive problems are less capable scholastically in that they exhibit a carefreeness approaching apathy which is below the threshold of stimulability.

It will be observed that in the data the terms "mental" and "physical" have not been used. Thoughts, feelings, attitudes, conditions, and environment have been given an importance no less significant than x-rays, chemistry, organ-pathology, morphology and function in evaluating the comfort and usefulness of human beings. By such contacts with psychobiology it is felt that the student has made a minor but an adequate debut into psychiatry.

#### SUMMARY.

1. The psychobiologic approach to life is that of treating it as a whole rather than splitting it into "mental" and "physical."
2. Seven lectures dealing with the problems of life as a whole are given to first-year medical students.
3. Each student is required to write an autobiography in which he discusses frankly the problems that have been troublesome in his life.

4. The data from these autobiographies are classified.
5. It is felt that such autobiographical data not only serves as a means of getting acquainted with the students, but also afford a useful approach to the psychiatric training most helpful to the general practitioner of medicine.
6. These autobiographies present methods and conditions by which the hazards of life have been overcome or rationalized.
7. Other educational and psychiatric problems are suggested by the data.

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#### DISCUSSION.

DR. OSCAR J. RAEDER (Boston, Mass.).—I think we must all agree that this is a very good step in the right direction, the idea of training people in general, not only medical students, in regard to a more clear understanding of the practical psychic phenomena of every-day life as we all know it. It would seem to me perhaps these things ought to be done before the student gets in the medical college, but then that is beyond the sphere of this paper.



To confine ourselves to the medical school, I think it is a very good point that Dr. Prout and Dr. Ziegler make to bring this thing in right in the first year after the study of anatomy, physiology and chemistry, which emphasize the deep-seated idea of the physical and mental and their separation.

I remember the second day after I had become resident physician in a large mental hospital, the superintendent said, as we were reading over the reports of the file, "Well, I see you met Louisa last night." I said, "I had a call to F3. She had a terrible pain and she was all doubled up with colic of some kind, and the night nurse—who hadn't been there very long—was quite worried and called me over. I hurried as quickly as I could, tried to make a diagnosis. I thought she had appendicitis, but I saw she had a scar there, so I thought perhaps she had been operated on. I looked at the gall bladder region and it had a scar there, so I thought maybe that had been operated, too. I finally figured she must have a kidney colic, so we gave her morphine and went back to bed."

The next morning the superintendent said, "Well, she does that to every new physician that comes in. It takes her just about one day to find out there is a new physician in charge, and she has to have so much attention. As a matter of fact, she had all those operations before she came in. They operated on her for appendicitis and found a chronic appendix; they operated for gall stones, but there weren't any gall stones there. She had had a kidney exploration, but they found nothing there. So, after she has the first call, is introduced to the doctor, and has attention, she never has any more trouble from any of the physicians." And I had the same experience.

So, it seems to me it is a splendid idea for these young students of medicine to get an idea of the emotional. We can all see bile ducts clogged and uriniferous tubules interfered with, and so on, but when we look at the brain we see no tubes and no secretion. We don't realize that ideation may be a secretion of the brain. Any effort that can stimulate an understanding in the student's mind of the difficulties that an emotion may cause, that a dyspepsia or indigestion, belching of gas, pain, headache, tiredness might be due simply to worries about a sick child or mother-in-law, or some financial problem or what not, is a step in the right direction.

I wish to congratulate the authors on putting such a thing into the curriculum, instead of allowing the student to pick it up as he will and as he may. It will also be a great boon to psychiatrists; it will save us the trouble later on of instructing surgeons about some of these emotional problems.

DR. WM. C. GARVIN (Binghamton, N. Y.).—This is a very interesting paper. I would like to ask Dr. Prout what is done with the questionnaires. Do students come to discuss their problems? The more I see of neurotic and psychotic disorders the more I am convinced of the importance of prevention and that measures to that end should be instituted in the early formative period of life. This means in the school period and is a job which the school system must assume sooner or later. Mental hygiene in the schools has many implications. It should apply, not only to the pupils,

but also to the teachers (who are often in need of mental hygiene as much as some of the pupils), to the home and other agencies having to do with the mental and physical health of the child. A child guidance clinic with a properly trained personnel should be an integral part of every well-organized school system.

DR. LLOYD H. ZIEGLER (Albany, N. Y.).—The question of Dr. Garvin can be answered in the affirmative. The students have ample opportunity to come to us at any time with unsolved and bothersome problems which have arisen in the course of their lives. In the case of a few, such discussions have removed a great source of worry. Masturbation problems have been puzzling to some students, and especially where they have been conditioned to regard it as undermining their future health and stability.

Dr. Prout and I have tried very hard to use a terminology which implied biologic unity of the person instead of the dichotomy, mental and physical. People are so apt to regard somatic pathology as real, and psychopathology as imaginary. Such implications have been presented in this room this very afternoon. It would seem that, as physicians, and especially as psychiatrists, we should develop a wiser and more comprehensive conception of the word, real. What is there about psychopathologic entities that keep them from being real?

Many of us know what general paresis is, or the unusual features of schizophrenia; many of us know the affective disorders with extreme melancholia, elation and overactivity, but we are inclined to ignore or pay too little attention to the seemingly less pathologic symptoms which may be extremely discomfoting to some alert and capable persons. It might be well to begin to study some of these in the students themselves when they step inside our medical colleges.

## CLINICAL STUDIES OF MENTAL TESTS.\*

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The clinical psychologist rightly insists upon the need for interpreting the results of mental tests in the light of all the available data secured from the social investigation, physical examination, and personality study of the patient. Experience has shown that the acceptance of test findings at their face value or the limitation of interpretive skill to the tests alone frequently leads to serious consequences. The study and treatment of individuals presenting behavior problems require the integrated efforts of the psychiatrist, psychiatric social worker, and psychologist.

Because the findings of the psychologist lend themselves to quantitative expression, and because such expression is apt to carry an air of finality about it, qualitative evaluation of test results in the light of all other clinical data becomes the more essential.

The factors which need to be considered in adequate test interpretation may be conveniently grouped into four divisions. Although equally applicable to many mental tests these factors are primarily concerned with the results obtained from the most widely used intelligence test, the Stanford Binet examination.

I. In the first group we may consider briefly the factors which influence test performance. The physical condition of the individual taking the test, the language he speaks at home, his race and nativity, social and economic status, and special abilities or disabilities may affect the test response.

Gross physical handicaps and deviations are easily recognized while minor difficulties are likely to be overlooked. The physical examination and disease history furnish information of extreme value to the psychologist. The psychological examination in itself

\* Read at the eighty-ninth annual meeting of The American Psychiatric Association, Boston, Mass., May 29-June 2, 1933.

The writer wishes to acknowledge his indebtedness to Miss Helen Speyer for invaluable assistance in the preparation of this study.

offers opportunity for observing minor handicaps such as visual or hearing defects, fatigability, unusual slowness of response, etc.

A child of foreign born parents who does not speak English at home may be at a disadvantage in a verbal test of intelligence. Studies have also shown wide differences in average intelligence scores made by individuals of different nationalities and of different racial groups. Differences are also found on performance tests. It seems that cultural and social background play an important part in determining test scores. The fairness of applying our measuring instruments to these various groups is thus brought into question.

Again, fairly consistent differences in average intelligence ratings are shown by groups of individuals of different economic and social status. Separate norms for the different groups will hardly solve the problem since little agreement can be expected on criteria for classification. Consideration of the various angles of the problem presented by the individual case seems a more desirable method of solution. Aside from basic factors the immediate problems deal largely with practical application of test results. If the child of one racial or social group is to compete with children of his own group his test rating calls for quite another interpretation than if he is to compete with children of a different group. For example, an intelligence quotient of 80 may be considered an average rating for an individual of one group while an intelligence quotient of 120 may prove inferior for an individual of another group.

Great care is needed in evaluating the ratings of children who show special abilities or disabilities. Unusual rote memory for digits and several successes on these tests beyond the child's mental level, for example, will raise the intelligence quotient considerably. On the other hand, a child with a reading or arithmetic disability or undue emotional response to the school situation will lower his score because of failure on tests involving reading or the solution of arithmetic problems.

In addition to the above the test situation in itself offers an opportunity for observing various responses of the individual. His behavior during the examination and quality of his responses help determine the reliability of the rating obtained and frequently aid in indicating personality trends and significant experiences and attitudes.

II. In the second division are included factors which deal with limitations of the test itself. Here of importance are the problems of chronological age and the related problem of adult mental age, special advantages and disadvantages of training, and certain qualitative differences noted for some of the tests.

The possibilities of securing a very high intelligence quotient diminish with increase in life age. Thus, while a child of less than 10 years of age may obtain an intelligence quotient of 200, the highest quotient that can be obtained by an individual of 16 years or older is 122. Re-examination of an exceptionally superior child at an older age will show a drop in I. Q. merely because of this test limitation. This limitation may also lead to an unfavorable comparison of an older sibling who shows a lower I. Q. than a younger brother although both children may be equally bright. It can be easily seen that the expression of adult intelligence in terms of mental age or intelligence quotient is often misleading. Tests of adult intelligence are still unsatisfactory and the question of upper limit of intelligence development remains to be solved.

Several of the Stanford Binet tests, especially for the younger ages, are admittedly affected by training and environmental influences. An average child may be specifically taught at an early age to name colors, coins, give his name, count pennies, etc. This training will influence his test score. On the other hand, a child may lack opportunity for some of the usual training and experience and thereby be at a disadvantage on the test. These points can frequently be cleared up and evaluated by reference to the social examination.

Qualitative analyses of test results have shown that successes on some of the tests are more subject to training and actual life experience than on others. Thus the defective adult may succeed on some tests failed by the bright youngster of equivalent mental age. However, the same bright youngster earns his mental age more on the tests relatively free from the influence of training and experience, tests which are more apt to tax the defective adult.

III. Another aid in test interpretation is the comparison of test results obtained from several different types of examination. In addition to the Stanford Binet the most widely used tests are performance and educational achievement tests. When the findings of the several different tests agree the examiner has more confidence in his results. Disagreement or wide discrepancy calls for

an explanation. In some cases an explanation may be offered in terms of special abilities or disabilities, while in other cases wide discrepancies may be due to the unreliability of some of the ratings obtained.

IV. Finally, in the fourth division may be classed criteria of intelligence based on other than test results. Here the findings of the other members of the clinic team are extremely important. The developmental history, the school history, estimates of intelligence obtained from teachers and others, the findings disclosed in the psychiatric examination all need to be studied and evaluated.

Developmental factors such as teething, sitting, walking, talking, etc., correlate highly with intelligence. The school history with the detailed record of rate of progress, quality of work in various subjects, school changes, etc., frequently offers valuable help in estimating the child's general intelligence. The teacher's estimate of the child's intelligence also gives us a clue to her attitude toward him and helps in determining treatment steps.

The psychiatric examination is especially valuable. It brings to light many of the child's attitudes and helps in understanding his emotional life and its influence on his functioning mental level.

A brief citation of a case in which apparently none of the above factors in test interpretation were considered seems worthwhile. Although this is a striking case it is by no means as uncommon as one should like to find.

Patient, a 14-year-old boy, was referred to the Institute for Child Guidance because of lack of sociability and inability to speak plainly. The social examination showed that patient did not talk at all in school and not a great deal at home, although the parents stated that when playing with children he talks as well as anyone. A brother of the patient reports that he can speak as well as any of the children and is as easily understood. Patient is considered "dumb" by the teacher and has repeated the first term in school three times and spent five terms in 2A. He reached Grade 3B at 14. At school he is considered deaf. A report of a previous psychological examination made available to the Institute reads:

"Result of Stanford Binet Examination:

Birth Age .....	14-0
Mental Age .....	7-1
Intelligence Quotient .....	51

"Results of Standardized Educational Tests:

Reading .....	0
Arithmetic .....	2A



"Recommendations: Please place in ungraded class of appropriate age range. Speech correction. Ear examination. Help in reading. Help in number work."

Physical examination done at the Institute and at our recommendation elsewhere, disclosed nerve deafness estimated at 25 to 35 per cent and later at 60 per cent. No organic basis was found for the speech difficulty. Our own psychological examination resulted in an I. Q. of 86 on the Pintner Non-Language Scale and ratings at age and above age on a series of performance tests. These results were sustained on a re-examination nearly two years later. At that time his average age on a group of performance tests was eight months above his life age. He worked with precision and was careful of detail. Pantomime was used along with verbal instructions which seemed sufficient for him to carry out the tests without difficulty. He often indicated that he understood directions before they were completed. Patient was considered at least low average in intelligence.

Here quite evidently, although recognizing the presence of special handicaps as is shown by recommendations of ear examination and speech correction, the psychologist who did the first examination failed to recognize the absurdity of making recommendations on the basis of test results which obviously were meaningless. If the recommendation for placement in the ungraded class were carried out subsequent serious difficulties or placement in an institution for the feeble-minded might have easily followed.

At the time patient was referred to the Institute he was receiving speech training under the general supervision of a physician whom we shall call Dr. B. The social worker called to discuss the Institute findings and the following report appears in the record:

"Dr. B. read worker's summary of patient's case silently and then aloud for the benefit of the other doctors with no consideration of what effect this might have upon patient. He examined patient before the class, calling him a case of 'slovenly speech' and making fun of his posture and facial expression. Patient removed his hands from his pockets when criticized for this by Dr. B. Later, Dr. B. took patient to the eye, ear, nose and throat clinic where speech organs were examined: negative findings. Dr. B. asked for developmental history and patient's present grade placement. When he learned that a previous Binet test showed an I. Q. of 51 he said, 'I don't believe that his I. Q. is 51 but there is quite a discrepancy between your findings and the first test. The Binet test is very important. I'll see what he can do.' He called patient to him and shouted, 'Which weighs the most, a pound of lead or a pound of feathers?' Patient looked frightened and did not reply. Dr. B. then said, 'A girl cut herself into eighteen pieces and they said she killed herself. What is funny about that?' When patient tried to mumble an answer the doctor said, 'His I. Q. is not as high as 86 nor as low as 51. It is about 60.'"

Without going into any details of treatment it may be stated that the patient was given medical treatment, much work was done in changing family attitudes toward the boy, and the boy was placed in a school special-

izing in improved instruction of the deaf. A recent report from that school tells of patient's general improvement. He is much happier than when he entered the school and takes greater interest in his surroundings. While he is mainly concerned with his work he does not hold himself aloof from the other boys. He enjoys his work in carpentry. At first placed in the second grade, he made good progress and is scheduled to be promoted to 4A. His speech is reported to have improved a good deal although he still needs to be stimulated to speak.

This case needs no additional comment.

It is essential that the clinical psychologist should have sound judgment in varying from a routine testing program and skill in interpreting test results, and also that he should be in a position to estimate the reliability of his findings.

On the basis of all the data at his command can he predict whether subsequent examination will support his present findings?

A number of studies of repeated examinations, first on normal children and more recently on children presenting behavior problems, have shown a remarkable constancy of the intelligence quotient. Most studies agree that only about 20 per cent of children tested show a variation of over ten points. The average variation in I. Q. is about 5 points. A study of over 700 children with behavior problems reported by A. W. Brown in *The Journal of Educational Psychology*, Vol. 21, 1930, finds that only about 15 per cent show a variation of more than 10 points I. Q. on re-examination with an average change of 6.8. Contrary to previous studies of normal children by Terman and others, Brown finds that brighter children are more variable than average and feeble-minded children. After presenting his correlations he concludes that "the ratings on the feeble-minded cases are more reliable than the ratings on those with the higher I. Q.'s and that with behavior problem children the amount of change from one examination to another increases with increase in the intelligence rating." Brown also finds that the greatest variation is shown by children younger than six years.

Although only 15 to 20 per cent of cases show relatively large changes in I. Q., clinically it becomes important to be able to predict such changes even in a single case.

Stanford Binet re-examinations were given to 109 Institute patients. The average chronological age of the patients at the time of the first examination was 9.1 years with a range of from

2 years 6 months to 15 years 4 months, while the average age of the patients at the time of the second examination was 10.9 years with a range of 3 years to 17 years. The average interval between examinations was 21.3 months with a range of 2 to 80 months. For 64 per cent of the cases the interval was less than 2 years and for 86.2 per cent of the cases less than 3 years. The age distribution at first examination is shown below:

TABLE I.  
AGE DISTRIBUTION AT TIME OF FIRST EXAMINATION.

Age group.	No. of cases.	Per cent.
3 years- 5 years 11 months * .....	18	16.5
6 years- 8 years 11 months.....	40	36.7
9 years-11 years 11 months.....	29	26.6
12 years-14 years 11 months.....	20	18.4
15 years-17 years 11 months.....	2	1.8
Total cases .....	109	100.0

\* Includes 1 case 2 years 6 months.

The average I. Q. on the first examination was 94.4 with a range of 48 to 140 and the average I. Q. on the second examination was 96.8 with a range of 43 to 161. While the range of I. Q.'s is quite large there were only 9 cases on both first and second examination with I. Q.'s below 70 and only 7 cases of I. Q. 120 and above on the first test and 11 cases of I. Q. 120 and above on the second test. More than 75 per cent of cases on both examinations had intelligence quotients between 80 and 120.

In Table II are shown the amount and frequency of I. Q. changes on re-examination.

TABLE II.  
DISTRIBUTION OF I. Q. CHANGES.

Amount of change in I. Q. points.	No. of cases.	Per cent.
0- 5 .....	47	43.1
6-10 .....	26	23.9
11-15 .....	23	21.1
16-20 .....	9	8.3
21-25 .....	1	0.9
26-30 .....	3	2.7
Total .....	109	100.0

Of the 109 cases 7 obtained the same I. Q. on re-examination, 56 showed a rise and 46 a drop in I. Q. The average drop in I. Q. was 6 points while the average rise was 10 points. The average variation for the entire group regardless of direction of change was 8.9 points I. Q. Both the per cent showing a change in I. Q. of more than 10 points and the average variation in I. Q. are greater than the findings reported by Brown. However, our findings show close agreement with his when it is remembered that he found increased variation with increased I. Q. and greater variation for the younger ages. The average I. Q. of Brown's

TABLE III.

## INTELLIGENCE CLASSIFICATION AND AMOUNT OF CHANGE IN I. Q.

Intelligence classification.	Amount of change in I. Q. points.						Total
	0-5	6-10	11-15	16-20	21-25	26-30	
Retarded (I. Q. below 85) :							
Number .....	15	4	5	2	0	0	26
Per cent .....	57.7	15.4	19.2	7.7	0.0	0.0	23.9
Average (I. Q. 85-114) :							
Number .....	28	20	16	5	1	1	71
Per cent .....	39.4	28.2	22.5	7.1	1.4	1.4	65.1
Superior (I. Q. 115-161) :							
Number .....	4	2	2	2	0	2	12
Per cent .....	33.3	16.7	16.7	16.7	0.0	16.7	11.0
Total:							
Number .....	47	26	23	9	1	3	109
Per cent .....	43.1	23.9	21.1	8.3	0.9	2.7	100.0

group is only 78.7 with 27 per cent below 70 I. Q. and less than 1 per cent with I. Q.'s above 120. Also, 13.4 per cent are below 6 years of age and 25.5 per cent in the 6 to 9 age group in Brown's study as compared with 16.5 per cent in the group below 6 years and 36.7 per cent in the next age group in our study. The average I. Q. variation of the Institute cases below 6 years of age is 14.9 as compared with 7 to 8 points for all other age groups.

In Table III all cases are divided into three groups by intelligence classification at time of first examination. Here we see that there is a definite increase in the average amount of I. Q. change with increase in I. Q. Twenty-six retarded cases, I. Q. below 85, show an average change on second examination of 7.7 points; 71 cases of average intelligence, I. Q. 85 to 115, show an average change

of 9.5 points; while 12 cases of superior intelligence, I. Q. 115 and above, show an average change of 10.4 points I. Q.

An analysis of the psychologists' reports in which the test findings of the 109 first examinations are evaluated shows that the cases can be placed in six groups. (I) In the first group are 28 patients who cooperated well during the test and whose ratings were considered reliable. (II) In the second group are 19 patients who gave good cooperation but whose ratings were considered minimal because of restlessness, poor attention, etc. (III) In the third group are 5 patients whose ratings were questioned because of poor cooperation. (IV) In this group there are 28 patients all of whom showed handicaps of some sort which interfered with the reliability of the rating. These consisted of speech and language difficulties, reading disabilities, and physical handicaps. These patients are grouped together because of the small number of cases for each type of handicap. (V) In this group are 24 patients who during the psychological examination exhibited emotional factors such as extreme shyness, tension, distractibility, emotional blocking. The reliability of the test findings was questioned and in many cases considered minimal. (VI) In the last group are 6 cases of pre-school children presenting a special problem. With one exception these were all superior children who in spite of high I. Q.'s which seemed reliable were evidently at a disadvantage on the test because lack of school experience limited the range of their successes. Five of these children showed large increases on re-test by which time all of them had a period of school training. Only one of them showed a drop in I. Q. and the result of the second test was considered minimal because at the time of the re-test this child was still out of school and handicapped on some of the tests above his age.

Table IV shows the frequency and amount of change in I. Q. points made by patients distributed in the above six groups.

An examination of Table IV shows that 81.5 per cent of patients in group I whose ratings were considered reliable at the time of first examination, on re-test remained within 5 points of the original rating; 85.2 per cent remained within 10 points, and only 4 cases or 14.8 per cent changed between 11 and 15 points I. Q. Three of these patients showed a drop in I. Q. on re-examination. In all

of these cases, however, the results of the second test were considered minimal and re-examination recommended. In group II in which the ratings were considered minimal 6 cases or only 31.6 per cent remained within 5 points of the first examination. Four

TABLE IV.

FREQUENCY AND AMOUNT OF CHANGE SHOWN BY DIFFERENT GROUPS OF PATIENTS.

Group classification.	Amount of change in I. Q. points.						Total
	0-5	6-10	11-15	16-20	21-25	26-30	
I. Good cooperation. Rating reliable:							
Number .....	22	1	4	..	..	..	27
Per cent .....	81.5	3.7	14.8	..	..	..	100.0
II. Good cooperation. Rating minimal:							
Number .....	6	7	4	0	0	2	19
Per cent .....	31.6	36.8	21.1	..	..	10.5	100.0
III. Poor cooperation. Rating minimal:							
Number .....	2	0	2	1	..	..	5
Per cent .....	40.0	0.0	40.0	20.0	..	..	100.0
IV. Special handicaps. Rating unreliable:							
Number .....	6	12	6	3	1	..	28
Per cent .....	21.4	42.9	21.4	10.7	3.6	..	100.0
V. Emotional factors. Rating unreliable:							
Number .....	11	6	4	3	..	..	24
Per cent .....	45.8	25.0	16.7	12.5	..	..	100.0
VI. Pre-school. Special group:							
Number .....	..	..	3	2	0	1	6
Per cent .....	..	..	50.0	33.3	0.0	16.7	100.0
Total:							
Number ...	47	26	23	9	1	3	109
Per cent ...	43.1	23.9	21.1	8.3	0.9	2.7	100.0

of these ratings were still considered minimal at time of second examination. The remaining 68.6 per cent of patients in this group showed variations in I. Q. between 6 and 30 points. Similar findings are shown for all the other groups. The majority of the cases in all other groups for which the ratings were questioned



showed a variation in I. Q. of from 6 to 30 points and only between 21.4 and 45.8 per cent remain within 5 points of the first rating. Many of these findings were still considered unreliable for reasons similar to those given in the first report.

If the reports of both the first and second examination are studied with reference to the psychologist's estimate of the reliability of test findings we find that in 81.7 per cent of the cases a correct estimate was made. Leaving out the special pre-school group already described (6 cases or 5.5 per cent) there remain only 14 cases or 12.8 per cent, 4 of which showed a subsequent rise and 10 a drop in I. Q. which the psychologist failed to foresee. In the light of some of the findings in this study several of these cases might have been evaluated more adequately. All of them, however, showed relatively little variation in I. Q. on re-examination. Of these 14 cases 5 varied between 1 and 5 points, 8 varied between 6 and 10 points, and only 1 case varied 11 points.

A study of rise and drop in I. Q. in relation to improvement in behavior at time of second examination fails to disclose any definite trend in our cases. A special study of this topic is needed. The results of the first examination of many cases who later showed improvement in behavior were considered minimal for a variety of reasons at the time of first test.

A comparison of ratings secured on the Stanford Binet examination with those secured on the performance and educational tests was made. In general, the greater the consistency of the average performance age and average educational age with the Binet mental age the less is the variation in I. Q. on re-examination. This is shown in Tables V and VI. Seventy-three cases, who took both examinations, are compared for average performance age and Binet mental age and 44 cases are compared for average educational age and Binet mental age. The average changes in I. Q. points for the various groups are also shown.

For some of the above groups the number of cases is very small and the findings necessarily tentative. However, they do point to a definite trend of greater constancy of I. Q. for cases who show more consistent results on several different tests. Other factors need to be considered in each individual case.

In conclusion the need for further research in the field of test evaluation may be stressed. In order to make the test results clinically useful, whether in helping to understand the individual studied

TABLE V.

DISTRIBUTION OF CHANGES IN I. Q. POINTS BY VARIABILITY OF PERFORMANCE AND BINET AGES.

Variation of performance and Binet ages.	Amount of change in I. Q. points.				Total cases.
	0-5	6-10	11 and over.	Average change in I. Q.	
Two years and over:					
Number .....	4	7	6	9.4	17
Per cent .....	23.5	41.2	35.3	..	100.0
Less than two years:					
Number .....	28	13	15	7.8	56
Per cent .....	50.0	23.2	26.8	..	100.0
Total cases .....	32	20	21	..	73

TABLE VI.

DISTRIBUTION OF CHANGES IN I. Q. POINTS BY VARIABILITY OF EDUCATIONAL AND BINET AGES.

Variation of educational and Binet ages.	Amount of change in I. Q. points.				Total cases.
	0-5	6-10	11 and over.	Average change in I. Q.	
Two years and over:					
Number .....	0	1	4	8.5	5
Per cent .....	0.0	20.0	80.0	..	100.0
Less than two years:					
Number .....	18	13	8	7.4	39
Per cent .....	46.2	33.3	20.5	..	100.0
Total .....	18	14	12	..	44

or in developing a treatment plan, the psychologist must not only be expert in test administration but he must also possess skill in integrating his findings with the data secured by the other members of the clinic team.

## CONSTITUTIONAL FACTORS IN HOMOSEXUALITY.\*

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AND

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With the increasing appreciation of the bisexual nature of all humans has come a feeling of futility in the struggle of the individual to be regarded as exclusively male or female. Reflection upon the causes of the increase in homosexual adjustments soon leads to the conclusion that western civilization has imposed even greater burdens upon those who established homes and reproduce. The result is an increase in the practices of the sexually immature.

It is generally accepted that the libidinous preferences of an individual at a given time are the result of innate tendencies, past experiences and opportunity for expression. Some form of gratification is inevitable and to the extent that heterosexual adaptations are difficult less mature forms of adjustment naturally follow.

Indications of the potency of homosexual desires are revealed in the prevalence of homosexual relationships among primitive people and in earlier civilizations. Most of our modern countries have found it necessary to establish laws prohibiting such practices. Wherever men and women are segregated from each other, whether in schools or in military organizations, homosexuality tends to increase.

Physicians are no longer concerned with the detection of homosexuality but rather with the extent to which homosexual inclinations may contribute to illness. They have been occupied to such an extent, however, with the purely psychological aspects of this

\*In this study an individual was regarded as being homosexual when there was evidence of pleasure derived from repeated homosexual relationships. Such an individual also failed to make an adequate heterosexual adaptation and in illness manifested either overt homosexual desires or compensatory strivings against them.

Read at the eighty-ninth annual meeting of The American Psychiatric Association, Boston, Mass., May 29-June 2, 1933.

problem that homosexuality has come to be regarded by many as being almost entirely psychogenically determined. The constitutional and physiological components of homosexuality have been neglected and it has been too readily assumed that psychotherapy may make either a heterosexual or a homosexual adjustment satisfying.

## FORM FOR RECORDING PHYSICAL DATA.

Name					Age	Sex	
DIAGNOSIS					S . M. W. D. C.		
SKELETON:							
Bones	Heavy	Light	T-L Ratio	Angle Arm	M. F.		
Biacro D	Bi-iliac D.		Pubo-sacral D.	Height			
FAT:							
Firm	Soft	Breast	Shoulder	Girdle	Buttocks		
MUSCULATURE:							
Large	Small	Firm	Soft				
HAIR:							
Coarse	Fine	U. lip	Chin	Chest	Pubis M. F.		
Thighs	Legs	U. Back	L. Back				
SHAVING:							
VOICE:	High	Low					
GENITALIA:							
Male:	Penis	Large	Small	Scrotal fold			
	Testicles	Large	Small	Firm			
Female:	Uterus	Adult	Infantile	Hymen:	Present	Absent	
	Ext. Genitalia	Adult	Infantile				
	Clitoris	Large	Small	Average			
MENSTRUATION:							
Homosex.	Active	Passive	Oral	Anal			
Heterosex.	Active	Passive	Normal	Oral	Anal	Children	
Preference	Mast.	Homosex.	Heterosex.				
GENERAL SUMMARY:							

Our purpose at this time is to present the evidence of constitutional and physiological factors in the adaptations of individuals whose psychosexual histories have been thoroughly investigated and to try to correlate the physiological and psychological aspects of homosexuality. We hope that a better understanding of sexual prob-

lems may thus be obtained and that their complexity may be more fully realized.

Observations were made without selection of cases upon 123 male and 105 female patients regardless of the nature or stage of the illness and before their psychosexual histories were studied. Note was made of those constitutional and physical characteristics which are usually associated with maleness and femaleness. Some of these notations were of precise measurements but most of them were dependent upon direct impressionistic observations. They were recorded on the accompanying form which will serve to acquaint the reader with the nature and extent of the observations.

Comment upon the various topics investigated may be desirable. Certain skeletal phenomena were of interest because of the usual differences between the male and female. The torso-leg ratio was determined from measurements of the distances between the suprasternal notch to the anterior superior spine of the ilium and between this spine and the most distal portion of the external malleolus of the homolateral fibula.

The differences in the carrying angle of the arm of the male and female have long been noted. In a series of observations \* on the carrying angle of the arms of adults it was found that the angle in males was sometimes as great as  $178^\circ$  while in females the angle may be only  $154^\circ$ . In our own study an arm which was practically straight was arbitrarily called masculine and the angle observed in the individual case was recorded as one, two, or three plus according as it approximated the minimum angle observed in females.

In order to compare the width of the shoulders with that of the hips note was made in each case of the biacromial diameter and of the distance between the anterior superior spines. Some indication of pelvic development was also obtained by measuring the external conjugate.

Record was made of the consistency and distribution of fat. Regardless of the sex the amount of fat on the breasts, shoulders, abdomen and in the buttocks was indicated by zero when it was minimal and by an increasing number of plus marks as maximum fat deposition was approached.

\* Nagel, K.: Untersuchungen über den Armwinkel des Menschen, *Ztschr. f. Morphologie und Anthropologie* (1906-07), 10: 317.

The muscular development was recorded as being large or small with due regard for the age and sex of the individual. In like manner the muscles were also noted as being firm or soft.

By a series of plus marks the presence, distribution and amount of hair on the face, trunk and extremities were noted. Special attention was paid to the distribution of pubic hair. Whenever possible the age at which shaving was begun was also noted.

The pitch and quality of the voice might have been described in some detail but we confined our attention to whether the voice was high or low in pitch. In our notations we made allowance of course for hoarseness that might result from excessive talking or from laryngitis or other source.

In both sexes the degree of development of the genitalia was observed.\* Careful note was made of the presence and of the extent to which a scrotal fold † persisted. When this fold was terminated by the mid-lateral surface of the base of the penis it was called one-plus. If the fold completely encircled the base of the penis it was noted as being four-plus. Intermediate stages were given the appropriate number of plus marks.

After these observations had been made the psychosexual history of each patient was obtained from the clinical records. No patient was included in this study who had not been in the hospital at least three months. Information regarding sexual experiences and preferences was obtained from the formal history, the personality study and the records of clinical investigations. These records were made by the various members of the staff of the hospital and independently of this research.

From the data thus obtained it was discovered that 33 patients had conspicuous homosexual experiences and preferences. This

\* We are indebted to Thomas C. Peightal, visiting gynecologist for his observations of the genitalia of women patients.

† The scrotal fold is seldom mentioned in medical literature and its significance may not be known to all readers. It is a remnant of embryological life and of a period when the external genitalia were not completely differentiated into male or female organs. This fold is a genital swelling which surrounds the phallus and which in the female gives rise to the mons veneris and the labia majora. In the fully developed external genitalia of the male this fold has entirely disappeared. For further description see Keibel, F., and Mall, F. P.: *Manual of Human Embryology*, Philadelphia, 1910, Vol. II, p. 958.



group was selected for special study and for comparison with a group of 15 patients whose heterosexual adaptation was reasonably satisfactory. It was, of course, necessary to subdivide these groups according to sex before any comparative study could be made.

In order to arrive at some general estimate of the physical characteristics of each group somewhat arbitrary values were assigned to the notations in each case. Under male characteristics were included heavy bones, a carrying angle greater than about 170 degrees, a minimum amount of firm adipose tissue, large and firm muscles, coarse hair on the face, the chest, and the extremities and a masculine distribution of pubic hair, a low-pitched voice, the usual male genitalia and absence of scrotal fold. In like manner under female characteristics were included light bones, a carrying angle less than about 170 degrees, the usual adipose tissue found in the female breasts, shoulders, abdomen, and buttocks, small soft muscles, absence of or not more than a slight amount of fine hair on the face, chest and extremities, the usual feminine distribution of pubic hair, a high-pitched and a soft voice, and the usual adult female genitalia.

In the following table will be found a record of the actual number as well as the percentage of patients in whom the various masculine and feminine characteristics were observed.

	Male heterosex.			Male homosex.			Female heterosex.			Female homosex.		
	M.	F.	%	%	M.	F.	M.	F.	%	%	M.	F.
<i>Skeleton</i>												
Heavy .....	1	..	20	24	4	..	4	..	40	19	3	..
Light .....	..	4	80	76	..	13	..	6	60	81	..	13
Angle of Arm:												
More than 170°	3	..	60	24	4	..	3	..	30	12.5	2	..
170° or less...	..	2	40	76	..	13	..	7	70	87.5	..	14
<i>Fat</i>												
Firm .....	3	..	60	59	10	..	1	..	10	25	4	..
Soft .....	..	2	40	41	..	7	..	9	90	75	..	12
Breast .....	4	..	80	81	13	..	..	10	100	6	1	..
	..	1	20	19	..	3	..	..	..	94	..	15
Shoulder .....	5	..	100	88	15	..	2	..	20	69	11	..
Abdomen .....	3	..	60	81	13	..	1	..	10	44	7	..
	..	2	40	19	..	3	..	9	90	56	..	9
Buttocks .....	3	..	60	59	10	..	..	..	..	..	..	..
	..	2	40	41	..	7	..	10	100	100	..	16

	Male heterosex.			Male homosex.			Female heterosex.			Female homosex.		
	M.	F.	%	%	M.	F.	M.	F.	%	%	M.	F.
<i>Muscles</i>												
Large .....	1	..	20	35	6	..	2	..	20	12.5	2	..
Small .....	..	4	80	65	..	11	..	8	80	87.5	..	14
Firm .....	3	..	60	71	12	..	3	..	30	94	15	..
Soft .....	..	2	40	29	..	5	..	7	70	6	..	1
<i>Hair</i>												
Coarse .....	2	..	40	35	6	..	2	..	20	12.5	2	..
Fine .....	..	3	60	65	..	11	..	8	80	87.5	..	14
Upper Lip .....	5	..	100	65	11	..	?	..	..	62.5	10	..
Chin .....	5	..	100	59	10	..	?	..	..	37.5	..	6
Chest .....	5	..	100	41	..	7	..	?	..	94	..	15
Pubis .....	..	..	..	71	12	..	..	..	..	31	5	..
Thighs .....	..	..	..	29	..	5	..	10	100	69	..	11
Legs .....	4	..	80	53	9	..	..	..	..	37.5	6	..
Upper back .....	..	1	20	47	..	8	..	10	100	62.5	..	10
Lower back .....	5	..	100	100	17	..	2	..	20	62.5	10	..
Shaving .....	..	..	..	..	..	..	..	8	80	37.5	..	6
..	5	..	100	100	17	..	7	..	70	100	16	..
..	..	..	..	..	..	..	..	3	30	..	..	..
..	1	..	20	12	2	..	..	..	..	6	1	..
..	..	4	80	88	..	15	..	10	100	94	..	15
..	2	..	40	12	2	..	..	..	..	19	3	..
..	..	3	60	88	..	15	..	10	100	81	..	13
..	5	..	100	82	14	..	..	..	..	..	..	..
..	..	..	..	18	..	3	..	..	..	..	..	..
<i>Voice</i>												
High .....	..	1	20	65	11	..	..	9	90	87.5	..	14
Low .....	4	..	80	35	..	6	1	..	10	12.5	2	..
<i>Penis</i>												
Large .....	5	..	100	61	11	..	..	..	..	..	..	..
Small .....	..	..	..	37	..	7	..	..	..	..	..	..
<i>Scrotal Fold</i>												
Absent .....	2	..	40	6	1	..	..	..	..	..	..	..
Present .....	..	3	60	94	..	16	..	..	..	..	..	..
<i>Testicles</i>												
Large .....	5	..	100	76	13	..	..	..	..	..	..	..
Small .....	..	..	..	24	..	4	..	..	..	..	..	..
Firm .....	4	..	80	71	12	..	..	..	..	..	..	..
Soft .....	..	1	20	29	..	5	..	..	..	..	..	..
<i>Uterus</i>												
Adult .....	..	..	..	..	..	..	..	10	100	71	..	10
Small .....	..	..	..	..	..	..	..	0	..	19	4	..

\* Four of the female heterosexual patients were past middle age and it was therefore difficult to evaluate the hair on the face.

	Male heterosexual.			Male homosex.			Female heterosexual.			Female homosex.		
	M.	F.	%	%	M.	F.	M.	F.	%	%	M.	F.
<i>External Genitalia</i>												
Adult .....	..	..	..	..	..	..	..	10	100	74	..	11
Small .....	..	..	..	..	..	..	..	0	..	13	2	..
Large .....	..	..	..	..	..	..	..	0	..	13	2	..
<i>Clitoris</i>												
Large .....	..	..	..	..	..	..	..	0	..	13	2	..
Adult .....	..	..	..	..	..	..	..	10	100	74	..	11
Small .....	..	..	..	..	..	..	..	0	..	13	2	..
<i>Hymen</i>												
Present .....	..	..	..	..	..	..	..	0	..	40	..	6
Absent .....	..	..	..	..	..	..	..	10	100	60	..	9
<i>Menses</i>												
Age Onset .....	..	..	..	..	..	..	..	12.3	years	13.4	years	
Irregular .....	..	..	..	..	..	..	..	0	..	40	..	4
Regular .....	..	..	..	..	..	..	..	10	100	60	..	9

By studying the tabulation in some detail, it was found that many of the homosexual males have a feminine carrying angle of the arm, large muscles, deficient hair on the face, chest and back, a high-pitched voice, small penis and testicles and the presence of a scrotal fold. Not uncommonly they have soft fat in greater amount on the shoulders, abdomen and buttocks. Some have an unusually large penis.

In like manner the female homosexual patients are characterized by firm adipose tissue, deficient fat in the shoulders and abdomen, firm muscles, excess hair on the chest, back and lower extremities, a tendency to masculine distribution of pubic hair, a small uterus, either over- or under-development of the labia and either an unusually large or small clitoris. Among the homosexual females there was also a tendency toward under-development of the breasts, fine hair, excess hair on face and a low-pitched voice.

One of the more common associations with masculinity and femininity is the relative width of the shoulders and hips. In each case the ratio between the biacromial and the interspinal diameters were determined. The average ratio for 123 male patients was .754 and for 105 female patients was .800. The ratios in the heterosexual males were 757, 782, 750, 743 and 725. In the homosexual males they were 885, 714, 737, 729, 723, 686, 729, 703, 639, 671, 657, 727, 750, 684, 666, 722 and 639. In other words the heterosexual male ratios were equally distributed and slightly above or below the average for the whole group while the homosexual male ratios

deviated farther from the average. Sixteen out of the 17 homosexuals had broader shoulders \* with respect to the pelvic diameter than the average for the whole group of male patients. The same is true of the ratios in the heterosexual and homosexual female patients, except that the deviation of the homosexual ratios from the average is less than was found with the homosexual males. The homosexual female ratios are also evenly distributed above and below the average ratio for all of the females.

The average torso-leg ratio of 123 men was found to be 512 and in 104 women it was 521. A greater tendency to deviate from the average torso-leg ratio was observed in the homosexual males, as nine of them had an average torso-leg ratio of 525 while the average ratio of eight homosexual patients who deviated in the other direction from the general average was 469. The average heterosexual deviations were 540 and 500. In other words there seems to be a distinct tendency to long legs with respect to the length of the trunk in homosexual males.

On the other hand the torso-leg ratio of heterosexual females deviates farther than the ratio of homosexual females from the general average female ratio. The average heterosexual deviations were 561 and 502 and the average homosexual deviations were 549 and 494. This greater deviation was due to a tendency to a longer trunk with respect to the length of the legs in heterosexual females.

From the measurements of the external conjugate of 123 male patients the average was found to be 18.2 cm. while the average external conjugate of 103 female patients was 17.3 cm. In comparing the measurements of the two groups of patients the homosexual male external conjugate proved to be slightly longer,—the homosexual being 17.8 cm. while the heterosexual was 17.3 cm. The difference in the external conjugate measurements of the group of female patients was much more marked. The average heterosexual external conjugate was 19.2 while that of the homosexual was only 17.6 cm. The external conjugate measurements of the homosexual female patients were as follows: 18.5, 17.5, 17, 17.5, 18, 18, 19, 18, 18.5, 18.5, 16, 16, 15.5, 19, 16.5, and 18 cm. This means that

\* A study of the actual measurements shows that the average biacromial diameter is the same for both the heterosexual and the homosexual males but the interspinal diameter of the heterosexual male averages about 2 cm. longer than that of the homosexual male.

in about one-half of these patients the conjugate vera was probably shortened and with about one-third of them serious interference with normal delivery might be expected because of pelvic contraction.

Such obvious differences in the physical constitutions of heterosexual and homosexual patients along with the accompanying physiological implications should predicate psychosexual differences. When the actual performance of these groups is compared this expectation is fully realized. All of the heterosexual patients were married and reproduced. None of them had been divorced. The male heterosexual patients were the fathers of from one to four children and the female heterosexual patients had given birth to from one to seven children.

In contrast to this none of the homosexual male patients had children and only three of the seventeen had married. Two of these three were divorced and the third was separated. Of the 16 homosexual female patients five had married but two of these were divorced and one marriage annulled. Only four of this group had reproduced and none of them had more than one child.

The problem of the extent to which there may be constitutional and physiological predisposition to heterosexual and homosexual adaptation will probably always give rise to much speculation. In this particular study the basis for the selection of the two groups was the psychosexual development of each patient as noted in the clinical history and in the records of interviews with the patient. In order that the reader may deal with this clinical material as he chooses it will now be outlined briefly. After the psychosexual history has been stated the more significant physical findings in each new case will be added. The figures at the left refer to the age of the patient when some important personal event took place. The limitation of space for publication does not permit the citation of all of the cases but a few are included as illustrative of the different groups.

#### MALE HETEROSEXUAL.

CASE 70.—Age 35. Married. One child. Devoted to mother.

- 14-15. Taken to museum showing venereal disease. Told evil consequences of venereal disease and masturbation.
- 18. Visited prostitute. Occasional sexual relations since with satisfaction.
- 24. Married. Strong sexual urge. Relations four times per week without difficulty. No extramarital relations.

25. Wife arrested for shop-lifting. Wife developed violent attachment for young woman.
  30. Wife having paid less and less attention to patient he began to drink to excess. Wife refused to have children. Patient disappointed. Deceived wife by making hole in condom. Child born. Wife paid no attention to child.
  32. Wife intimate with coast guardsman. On returning home from hospital accused wife of infidelity, threatened to kill her and began drinking again.
- Physical Traits:* No feminine physical characteristics except for a high-pitched voice.
- Diagnosis:* Alcoholism without psychosis.

#### MALE HOMOSEXUAL.

CASE 106.—Age 42. Divorced. Father very strict and patient hated and dreaded him.

2. A timid child. Frightened by brother jumping at him.
- 3-4. Learned catechism or was boxed on ear by father.
4. Frightened by brother dressed in white sheet as ghost.
6. In constant fear of punishment. Older brother teased and bullied him. Mutual exhibition with boy and patient tried to pass a match into other boy's urethra. Continuous beatings for disobedience and lying.
7. Spying on sister, aged 3, in bathroom. Made repeated sexual advances to her.
11. Peeping activities continue.
13. Taught masturbation and various homosexual practices.
15. Stopped masturbation for two years because of sense of guilt.
19. Homosexual love affair.
22. Succumbed to a prostitute who acted as his mistress for three summers. Fear of having impregnated landlady's daughter. Had homosexual admirers.
25. Gonorrhea.
28. Elated. Had frequent sexual relations chiefly with married women. Became depressed.
30. Intimate with married woman who represented that she might be pregnant by him.
32. Eight months psychoanalysis. Intimate with divorced woman with four children, who was also being treated by analyst. Patient married her but his family had to support them. One of his male friends became interested in his wife. Patient was jealous and wife attempted suicide.
34. Intimate with nurse who wanted him to divorce his wife and marry her.
42. Psychotic. Regards himself as bisexual. Made homosexual advances and accused physicians and male nurses of being homosexual. Feared male nurses would attack him. Wife obtained divorce.



*Physical Traits:* Light bones, feminine carrying angle, narrow hips, somewhat contracted pelvis, deficient hair on face and extremities, feminine pubic hair, high pitched voice, very large penis and a four plus scrotal fold.  
*Diagnosis:* Psychopathic personality. Manic-depressive, circular type.

#### FEMALE HETEROSEXUAL.

CASE 209.—Age 39. Widow. Two children. Closer to mother. Father stern.

11. Menses regular. Frightened at first appearance.
17. Mother died. Patient took her place in the home. Regarded as an "old fashioned girl."
20. Met future husband.
23. Married. Adjusted well to marital life.
34. Husband died. Patient very melancholy but could not weep.
35. Anxious, depressed, hypochondriacal. Sometimes feels that her husband is calling her to join him.

*Physical Traits:* Entirely feminine physical characteristics except masculine carrying angle, and slight excess of hair on upper lip and legs. Has unusually broad hips, but the external conjugate is only 17.5 cm.

*Diagnosis:* Agitated depression.

#### FEMALE HOMOSEXUAL.

CASE 197.—Age 42. Single. Father reserved, passive and quick-tempered. Mother cold and reserved. Patient never talked of sexual matters. No love affairs. Attached to female teacher in high school and to another in college. Had maternal attitude toward younger brother of whom she was especially fond. Resentful of a dominant sister who was her father's pal. Fond of children, but never expressed a desire for any. Most of the men she liked were married.

38. Living with young female physician who talked to her about sexual problems. Later said that this physician was very repulsive to her, that she talked continuously about sex and called the patient a homosexual. Also interested in an older married man who reminded her of her father. She thought he wanted to marry her. Said she did not draw any distinction between men and women. Felt she and *another man* were to be crucified and that she was to be purified in order to marry.

*Physical Traits:* Narrow hips, small breasts, firm muscles, excess hair on face, and lower extremities, masculine pubic hair, small uterus.

*Diagnosis:* Dementia præcox, paranoid type.

#### DISCUSSION.

In regard to the results obtained from the skeletal measurements it is not surprising that the homosexual male has relatively narrow hips and that the boyish form is thus preserved. The tendency to

relatively long legs in the homosexual male may be another indication of delayed gonadal development with persistent thymus and compensatory pituitary activity. These characteristics together with a feminine carrying angle suggests that structurally the homosexual male has remained nearer the species type rather than progressing to the highly differentiated adult masculine form. Skeletal immaturity in the female homosexuals is most evident in the high percentage of contracted pelvis. It will be recalled that in about one-half of these patients the pelvis was contracted and that in about one-third of the female homosexuals serious interference with normal delivery might be expected.

In the absence of precise standards for comparison the notation of fat deposition in amount and distribution is entirely impressionistic. Although women are usually fatter than men, the race, heritage and habits of life of the individual are important factors in determining the relation of fat to body contour. Fat deposition is of course dependent upon the function of various ductless glands and both sexes tend to become obese after the period of sexual involution.

None of the patients included in this study has any gross endocrine dysfunction and none was pathologically obese or emaciated. A few had passed the period of sexual involution without presenting obvious corpulency.

Accurate estimations of the musculature were likewise difficult but the observations nevertheless tend to show that the homosexual more closely approximates a species type than the heterosexual. The male homosexual may have larger muscles but he also has excess fat and feminine contours. The female homosexual is often deficient in fat, has small and firm muscles and therefore tends to have more angular and masculine contours.

For many years the amount of hair on the face, trunk and extremities has been associated with the function of certain ductless glands. Scanty facial, pectoral and axillary hair along with feminine distribution of pubic hair suggests a persistent thymus. Hyperfunction of the adrenal cortex leads to early development of axillary and pubic hair in boys and to hirsutism in women. Hypertrichosis in women seems to be associated with the menstrual function, in that excess hair appears after puberty, during pregnancy, with amenorrhea and after the menopause. Often there is a spontaneous

disappearance of superfluous hair when menstruation returns following pregnancy or a period of amenorrhea.

Although there were no obvious endocrine anomalies in the patients included in the study there were marked differences in the growth of hair. Homosexual males tended to have a deficient growth of hair while the homosexual females were prone to have an excess growth of hair on the face, around the nipples, on the abdomen and the extremities. With regard to the growth of hair, therefore, it may be said that there was much more suggestion of arrested sexual development in the homosexual male patients than was found in the heterosexual male patients, while the homosexual female patients tended to have a masculine growth and distribution of hair.

Hypertrophy of as well as arrested development of the genitalia involves the function of the pituitary gland in addition to that of the thymus, the suprarenal cortex and the gonads. Genital anomalies not only have their physiological implications but they are also important factors in psychosexual adaptations of the individual. A small penis, for instance, often gives rise to a marked feeling of inferiority. In view of the greater difficulties which the homosexual individual meets in trying to make a heterosexual adaptation it is not surprising to find defective genital development a frequent accompaniment of homosexuality.

It should not be necessary to remark that the division of any group of human beings into those who are heterosexually adapted and those who are chiefly homosexual in their interests is somewhat arbitrary. Phylogenetically and embryologically it seems that we have evolved from a state of hermaphroditism and it would be unlikely, if not impossible, that any individual would lose all traces of bisexuality however mature he may become. A predominance of maleness or femaleness is all that may be expected in those who are heterosexually adjusted. In many individuals the sexual balance is so delicate that unfortunate sexual traumata early in life or the many obstacles in the pathway to sexual maturity may determine a homosexual development.

On reviewing the clinical material used in this study the most immediate observation is the scarcity of heterosexual males. Only five men or about 4 per cent of the male patients succeeded in making a reasonably adequate heterosexual adjustment. On the

other hand there were seventeen obvious homosexual males, *i. e.*, about 15 per cent of the total male group. Among the female patients only 6 per cent were obviously homosexually inclined and about the same percentage were heterosexually adjusted. From this observation it appears that an adequate heterosexual adjustment is more difficult for the male than the female and that a homosexual compromise is much more likely to occur.

In so far as these groups may indicate the general tendency among individuals with personality disorders a homosexual adjustment of male patients is more than three times as common as reasonably adequate heterosexual development. A heterosexual adaptation seems to be less difficult for female patients as the excess of homosexual over heterosexual individuals is only 50 per cent.

A more detailed study of the psychosexual histories of these groups calls attention to the importance of early sexual traumata as well as to the differences in psychosexual performance. When a comparison was made of the heterosexual and homosexual male groups it was found that two-thirds of the homosexual patients had sexual traumata in childhood and that the libidinous preferences thus established usually continued throughout life. All but two of the homosexual males attempted heterosexual relations but none of them succeeded in making a heterosexual adjustment. Failures were due to impotence, *ejaculatio præcox* or to preference for homosexual or other perverse sexual relationships. A few were actively promiscuous for a short time, usually while partially intoxicated. Some of the heterosexual experiences were either purely platonic or the sexual relations were incomplete. Some homosexuals were repeatedly seduced by women but they soon became inadequate if the heterosexual relations were continued. Not uncommonly heterosexual relations were attended by a feeling of disgust and one of the patients vomited whenever he attempted heterosexual relations.

In the psychotic state all of the male homosexuals manifested their homosexual trends in one way or another. About a third of them made homosexual advances and as many declared that other people were making them homosexuals, or using them for homosexual purposes. A few either feared castration or asked to be castrated. About one-third of them made violent attacks on other males and some of these patients also made desperate attempts to

kill themselves, usually by diving head first on the floor or against the wall. The psychotic reactions of the whole homosexual group tended to be paranoid and schizophrenic in nature.

The heterosexual males were throughout life consistently different from the homosexuals. There was no record of sexual traumata in childhood, no violent emotional reactions to parents, and none of them had any apparent difficulty with heterosexual relations. All of them married, they had from one to four children and there were no extramarital relationships. One of them became alcoholic after his wife refused to take care of their only child and he threatened to kill her when he found that she was unfaithful. The other heterosexual males were depressed when they became mentally ill and some of them were occupied with thoughts of having ruined their families. There were no suggestions of homosexual interests.

Among the female homosexuals there were eight who had had heterosexual relations. None of these made a satisfactory heterosexual adjustment. Six of them had masturbated in childhood, continued to obtain sexual gratification through masturbation only and were frigid in their heterosexual relations. Seven of the eight patients were sexually promiscuous, the eighth left her husband five weeks after marriage and contemplated murdering him. There was one other homosexual who married but she struck her lover on the eve of their marriage and urinated in his lap after the ceremony was performed. They never lived together and the marriage was annulled a few years later.

When the psychosexual histories of the female homosexuals are compared with those of the female heterosexuals the contrast is astonishing. In none of the heterosexual group is there a record of sexual traumata in childhood and there is no history of masturbation before puberty. It is improbable that the members of this group did not have sexual experiences in childhood but whatever these experiences may have been they seem to have made little impression on the patients or the family.

All of them married before the age of twenty-five, made a satisfactory heterosexual adjustment and had from one to seven children. Four of them became psychotic within a year after their husbands died and a fifth patient likewise became psychotic after her husband became impotent.

Even the psychotic productions of this group bear little resemblance to those of the female homosexual group. The heterosexual psychotic woman usually develops a profound sense of guilt for having indulged in any form of sexuality other than normal heterosexual relations with the husband. One manic patient, however, yelled "Down with birth control—my mother never let me know where babies came from but I've never missed a trick." Among those who were depressed one dreamed about being with her husband and that he was affectionate to her. (He had actually been alcoholic, was brutal to her and insisted upon fellatio relations with her. He was killed the year before the onset of her illness, while drunk). She also said, "He is in my thoughts all the time—that's why I dream about him." Another depressed patient felt at times that her dead husband was calling her to join him. None of them had paranoid tendencies.

On the other hand the psychotic female homosexuals seldom manifested any interest in the opposite sex and were occupied with homosexuality or incest relationships. Most of them expressed a feeling of attraction for their own sex and some made homosexual advances. Others accused nurses or patients of doing something to arouse them sexually. One-fourth of them made violent homosexual attacks and practically all of them expressed paranoid trends.

When the psychosexual preferences of the individuals included in this study were correlated with their official diagnoses it was found that in the heterosexual group there were four patients suffering from involution melancholia, six with manic-depressive depression, two with agitated depression and one with alcoholism. The homosexual group on the other hand was composed of three manic-depressive, five psychoneurotic, seven psychopathic, one paranoic and 17 schizophrenic.

In general it may be said that the psychotic reactions of the whole homosexual group tended to be paranoid and schizophrenic in nature while the heterosexual patients were occupied with feelings of depression, unpleasant sensations associated with bodily processes and they expressed ideas of unworthiness and self-condemnation. None of the heterosexual group manifested paranoid trends. During the periods of life when the heterosexual is not psychotic he is a fairly well adjusted individual. At least 25 per



cent of the homosexuals were psychopathic prior to the onset of mental illness.

It is probable that in this study we are dealing with a kind of homosexual individual, a kind in which the sexual cravings are intolerable and in which the conflict leads to schizophrenic disorganization of the personality. Heterosexual patients were uncommon probably because the psychotic has much less chance to make this adjustment than the average citizen. Civilization's most severe test seems to be imposed upon the heterosexual male.

#### SUMMARY AND CONCLUSIONS.

On the basis of a study of adult patients grouped according to the predominance of heterosexual or homosexual tendencies the following general summary and conclusions seem justifiable:

1. Homosexual patients show constitutional deviations from the general average which are considerably greater than those of the heterosexually adjusted.

2. The homosexual male is characterized by a feminine carrying angle of the arm, long legs, narrow hips, large muscles, deficient hair on the face, chest and back, feminine distribution of pubic hair, a high-pitched voice, small penis and testicles and the presence of the scrotal fold. Not uncommonly there is an excess of fat on the shoulders, buttocks and abdomen. Occasionally the penis is very large and the hips are unusually wide.

3. The homosexual female is characterized by firm adipose tissue, deficient fat in the shoulders and abdomen, firm muscles, excess hair on the chest, back and lower extremities, a tendency to masculine distribution of pubic hair, a small uterus and either over- or under-development of the labia and clitoris. There is also a tendency toward a shorter trunk, a contracted pelvis, under-development of the breasts, excess hair on the face, and a low-pitched voice.

4. The psychosexual histories in the heterosexual and homosexual groups are conspicuously different. All patients in the heterosexual group were married and had from one to seven children. None of them had been unfaithful after marriage and none of them had been separated or divorced. Only 25 per cent of the homosexual patients were married, none of them made a satisfactory hetero-

sexual adjustment and three-fourths of the marriages were dissolved by separation, divorce or annulment. As a result of these marriages the total number of children born was only four. (The 15 heterosexually adjusted patients had a total of 38 children.)

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#### DISCUSSION.

DR. PHILIP J. TRENTZSCH (New York City).—It is a great pleasure to discuss a paper of this type, as I have always been interested in the correlation of the organic and psychogenic factors in psychiatry. The doctors have done a very comprehensive piece of work and deserve credit for their thoroughness. The first thought that comes to my mind is concerning the group of cases studied. It includes all cases having become ill enough to be placed into a hospital for mental disease. I wonder if you would carry the same sort of work out on the borderline cases that we meet in the clinics, who probably later on develop a mental condition and have to enter a hospital.

Then there is another large group of cases who make some sort of a social adjustment, but still have homosexual tendencies and probably never develop a mental disorder sufficiently serious to warrant their being placed in a mental hospital. We find a large group of people who are married and have families, who have failed to make a heterosexual adjustment and later on in life, play with the idea of homosexual indulgence but probably never actually carry out the overt homosexual act.

I think it would be interesting to follow this work through in this large group of cases, and I wonder if the group that the doctors worked out would come under the classification of the pathologic homosexual of Havelock Ellis, or the sexual invert which he included in the inborn constitutional abnormalities. He also classified a group of homosexual people who have sexual attractions between persons of the same sex, and a bisexual group who make a satisfactory heterosexual and homosexual adjustment.

The doctors mentioned the difference between Western and Eastern civilization. It appears that the Dorian Greeks at the height of their cultural, intellectual and fighting ability indulged in homosexuality; in fact, the individual who did not indulge in homosexuality was considered queer. Today on the streets of Cairo, Constantinople, and various cities in the East, you are usually approached and offered a young boy for sexual purposes. In a great many countries homosexuality is not frowned upon at all.

We find homosexuality among animals, and I would like to relate an experience in visiting the Temple to the Monkey God, the God Hanuman. There were about one hundred monkeys there, the priest informing me that all of them were females, with the exception of one; and that once a year the other male monkeys came down from the jungles and staged a battle which lasted sometimes throughout the day and night, to determine the superior male. This male then remained for the following year with the females of the species and the other male monkeys retired to the jungle and there practiced homosexual acts.

Another interesting experience concerning homosexual characteristics and indulgencies occurred in Syria. I was invited to the circumcisional ceremony of the 13 year old son of the Druse tribe. The Druses are probably among the fiercest of the fighting races in the world today; in fact, following the World War, when the French went in to act as protectorate over the Syrians, they subdued easily all the various other peoples, but were unable to subdue the Druses, and today they are living under a truce. The ceremony opened with riding and various athletic sports. Soon they sent the women about a quarter of a mile away and formed a small circle under a canopy. A man with a skirt on stepped in the center of the ring. He was about thirty years of age, a rather swarthy, heavy built individual, and began an Egyptian muscle dance which continued for about ten minutes. The crowd enjoyed it. After he finished another man stepped in the ring. He had on no female attire, but also began a muscle dance. The music gradually increased in tempo, the dancer increased his muscular movements, and it was soon noticeable that there was an emotional tension; you felt it yourself. The performer

then selected a rather large heavy-set individual with a heavy mustache sitting over to one side of the ring and danced for him alone. The emotional tension, the tempo of the music and the muscular movements continued to increase. The man finally danced over to this individual and they exchanged kisses which were repeated several times. During their third approach the emotional status was such that they ended in a long kiss. The ceremony being now over refreshments were served, and evidently a good time was had by all. I discussed these practices with the sheik of the tribe. He could see nothing uncommon in them. This sort of a thing was carried on all the time; it was not frowned upon; they enjoyed it. There was no practice of birth control, and I wonder if the taboo concerning homosexuality in Western civilization is not a fundamental taboo for the continuation of the species.

As you go back through history you find quite frequently that certain tribes encourage homosexuality. When there was an increase in population and in agricultural communities, this was encouraged. So I think it would be very interesting to carry this work out on the groups of borderline cases and the large group of cases who have homosexual tendencies but make a fairly decent adjustment.

DR. B. KARPMAN (St. Elizabeths Hospital, Washington, D. C.).—It seems to me that in any scientific work there must be the discretion exercised with reference to certain selectivity of material, and I feel that Dr. Henry's choice of material was a little unfortunate, because he has undertaken to study homosexuality in people who have made a mixture of both homosexual and heterosexual adjustments.

To my mind, the ideal way of studying homosexuality would not be through psychoses, but through those cases that are termed borderline, or still better, the pure homosexuals; those who have never made any heterosexual adjustment regardless of opportunities, and I would reject anyone, (above a certain age) regardless of the condition, who has made even at least one heterosexual adjustment. From this I would proceed to the next type. The number of individuals belonging to this type is naturally very small, but New York City at least has enough of them to make the attempt worth while.

I believe that the scientific validity of Dr. Henry's conclusions is vitiated by the fact that he didn't have controls, or at least, I didn't get the impression that he had, proper controls. He makes a statement that among the homosexual men there is a tendency to female distribution of hair and among the females, to male distribution of hair. I don't know what he means by a tendency or proneness. I should like to see it expressed in—well, not exactly in mathematical figures—but in something like a more definite statement.

The problem I think is a very suggestive one and it has a number of significant ramifications. I have in mind a type of patient who has failed to make a heterosexual adjustment; but neither have there been any homosexual experiences. One is inclined to think of such patients as asexual, but their history shows addiction to masturbation. Where do they belong in Dr. Henry's scheme of things? There is further a type of patient who is

given to certain paraphilias which are perhaps but disguises of homosexuality as some might say.

I think, however, the general tendency of the paper is quite correct. Some time ago I was making a study of this kind, and I have come to the conclusion that just in proportion as there is an intrusion of homosexuality or there is a lack of heterosexual adjustment in the same patient, to that extent we can prognosticate a poorer outcome. In other words, the less heterosexual a psychotic patient is, the greater is the tendency to an eventual deterioration. I don't know whether I am right about it, but that is the impression I get from general observation. I wonder if Dr. Henry will confirm it.

DR. GEORGE W. HENRY (White Plains, N. Y.).—It is, of course, desirable in all scientific investigation to have controls. I should like to have them, but I can't imagine any group of whose psychosexual development we might know as much as we do of patients who have been under observation in a hospital for at least three months.

I don't know of a more accurate way of selecting homosexuals than on the basis of the complete psychosexual history. Even though individuals at large could be sharply divided according to their sexual preferences the possibility of suitable controls seems quite remote.

The comment about the hair is similar to many others that might be made. It would be very difficult to find a female whose pubic hair would match exactly our arbitrary notion of male distribution. But if a sufficiently large group of patients is observed and a report is made of what is actually found, both in the physical examinations and in the histories, I think that a contribution is being made to the understanding of the patients with whom we are immediately concerned.



# HISTORICAL SURVEY OF THE LITERATURE OF STUPOR WITH THE REPORT OF A CASE OF TWELVE YEARS' DURATION WITH COMPLETE AMNESIA FOR TEN YEARS.

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## INTRODUCTION.

The term stupor or trance is one popularly applied to sleepwalking, deep melancholia and to hypnotic, cataleptic, ecstatic and mediumistic states. Since the dawn of history these states have appealed strongly to popular fancy and have formed the basis of legends and works of fiction, filling newspaper columns and exciting attention in sundry ways. "Called Back" is a very excellent story of an hysterical trance following severe emotional shock. Euripides long ago described the stupor of Orestes as accurately as could any present day psychiatrist. MacCurdy, in his "Concerning Hamlet and Orestes," discusses the psychology of the dramatist in describing a psychosis correctly. Modern literature, as well, continues to be prolific. Julian Green's recent novel "The Closed Garden" is an excellent study of the development of hysteria with pronounced amnesia. Many religious personages have experienced ecstatic states. St. Paul's lasted as long as three days.

## HISTORICAL SURVEY OF THE LITERATURE OF STUPOR.

The psychiatric literature of stupor is unfortunately not as voluminous or comprehensive as is that of *belles lettres*. For a long time stupor was considered merely a depression but finally the French writers realizing its psychological significance began to write extensively of it though not always in accord. Among them were Pinel, Baillarger, Esquirol, Boismont, Dagonet. The latter in his excellent paper published in 1872 summarized the then existing French contributions. According to Hoch he defines "stupidity" as a form of insanity in which "delirious" ideas may or may not be present and which has for its characteristic symptoms

a state of more or less manifest stupor and a greater or less incapacity to coordinate ideas, to elaborate sensations experienced and to accomplish voluntary acts necessary for adaption. He quotes from Louyer Villermay (*Dict. des sc. méd. t. LIII, p. 67*): "The stupor patient is a fool who does not speak, in this being more tolerable than the one who speaks. One who is dumbfounded by surprise or fright is also to be called stuporous." Dagonet considered stupor to result from various causes and to vary clinically depending upon the situation in which it developed. He was the first to note that it occurred after mania, alternated with it or preceded it.

To Pinel may be given credit for calling attention to stupor, though Esquirol was the first to give it the specific name "acute dementia." Before this, and as the knowledge of basic causations of mental disturbance was gradually broadened, there had been considerable controversy over the single or dual origin of stupor. Confusion was further confounded in that one school held stupor to be merely a complicating factor in mental disease, while another school believed it to be an independent malady. Perhaps in order to simplify types, Baillarger in 1843 included every case in which stupor was a major or minor symptom in his "melancholie avec stupeur." He did admit the rare occurrence of acute dementia but held that Esquirol and Etoc-Demazy erroneously included many cases. Dagonet, however, was much broader than Baillarger in his views. Boismont even went so far as to urge the separation of stupor and melancholia.

The writer agrees with Hoch that if Dagonet be accepted as summarizing the early French investigations in stupor that their generalizations are still comparatively sound. These were: "That stupor is an abnormal reaction usually psychogenic but often the result of exhaustion; that it consists of a paralysis of emotion, will and intelligence; that the prognosis is usually good; that mental stimulation may produce recovery."

Generally speaking, French psychopathologists did not follow this brilliant beginning. During the years which saw progress being made in the study of stupor, hysteria had been confined to the anecdotal and descriptive with the clinical first receiving attention late in the 19th century. The disagreement of Charcot and Bernheim in 1877 furthered the development of psychological pathology

particularly as applied to hysteria. This threw the study of stupor, except as related to hysteria, into the background to be neglected by succeeding generations of French psychopathologists.

If neglected by the French, further investigation of stupor states was enthusiastically pursued by the Englishman Newington. His publication of 1874 laid the foundation for the modern conception and study of stupor, giving in his introduction full credit to the French workers who had preceded him. When he commenced his work the dual origin of "an inhibition of the functions of the higher nervous system and also from the intervention of fearful and terrifying delusions" was recognized. He considered a "nascent stage of stupor" as following commonly upon hard mental work, prolonged or acute illness, dissipation, etc. His investigations first brought out that the graver psychotic forms are due to physical exhaustion of the brain cells but he thought that psychic stress could produce this exhaustion thus recognizing a functional as well as an organic origin. He noted the uncertainty due to confusion of psychiatric terms and objected to the vague generality of Esquirol's "acute dementia." Instead he classified stupors as being "anergic" and "delusional." The former, he pointed out, may be primary (due to shock), or secondary (due to convulsions, mania in women or nervous exhaustion of any sort). The delusional form, he found, followed intense melancholia, general paralysis or epileptic seizures. He tabulated their points of difference carefully and accurately. In the anergic form he considered heredity and the individual liability as factors. Its onset was sudden, intellect was impaired, memory swept away, emotional apathy present, volition absent, motor system weak and uncertain, sensory and reflex systems dull, pupils dilated and physical condition poor. On the other hand he shows that almost antithetic symptoms characterize delusional stupor. He sums up the difference very aptly when he says that on the one hand there is a more or less complete absence of cerebration while on the other the presence of intense but perverted cerebration is the agent. The acuteness of onset has nothing to do with prognosis but the absence or presence of memory is the most important point of differential diagnosis. His cases all occurred in females under 30 years. In his study of 36 cases of mania, 6 terminated by passing through stuporous attacks.

British psychiatrists however emulated their French brethren in not following up a brilliant leader, for Clouston's summary in 1904 reveals comparatively little advance in the intervening thirty years. Clouston expressed the belief that stupor is a distinct mental disease, the age of onset being most commonly in the twenties. He noted that many cases showed hysterical stigmata and that in some there was a close relationship to the sexual life. His classification specifies three types: (a) the anergic in which consciousness and memory are absent, (b) the melancholic or severely depressed without amnesia, (c) the half-conscious or confusional. His clinical classification also includes attacks occurring in general paralysis, gross brain disease and epilepsy. His list of causes includes sexual excesses, hysteria, mental and moral shocks, brain exhaustion following acute mania, organic diseases, toxemia within and without (alcohol), as a stage in alternating insanity, adolescence, senility and brain atrophy. He noted that the anergic form is "a very curable form" and that about 50 per cent of the melancholic cases recover. The latter probably corresponds to Newington's "delusional" type though not so clearly defined. Unlike Newington he did not appreciate the importance of psychogenic causation.

Hoch ventures the opinion that the gap in psychiatric literature between the early French-Newington period and Kirby's contribution is filled by the literature of the German schools and their adherents. However, as German psychiatry has been more concerned with classification than symptomatology, it has tended more to make the patient a type than an individual and has not advanced the study of stupor as a disease *per se*. Wernicke called all conditions suggestive of stupor "akinetic psychosis" and merely said some recover and some do not. In 1874 Kahlbaum described stupor including it in his "catatonia." This sufficed the psychiatric world of the time until Kraepelin made catatonia one of the subdivisions of his dementia præcox. This automatically gave a bad prognosis to all but hysterical stupors. Bleuler, also of the German school, does not appear to recognize stupor as a clinical entity. On the other hand, Vogt, in 1902, made the first attempt at psychological interpretation explaining the stupor as being due to a restriction of "the field of consciousness" but he is not able to explain the why of the "restriction." Raecke in 1910 made the first statistical study of

catatonic states and found that 15.8 per cent improved, 54.2 per cent remained in institutions and 30 per cent died.

Prior to Raecke's study, Adolf Meyer in America realized that a certain percentage recovered and, in order to include these, formed the groups "allied to manic-depressive" and "allied to dementia præcox." Kirby then took up the study and in a paper published in 1913 was one of the first to venture a more hopeful prognosis in stupor. He claims that there are two different catatonic processes, one deteriorating and one non-deteriorating. To him stupor represents an attitude of defence and he holds that in a number of cases it was clear that the stupor symbolized the death of the patient. Apparent negativism he found to be a consciously assumed attitude of aversion toward an unpleasant emotional situation. To reach a conclusion of good or bad prognosis he depended upon the mental make-up and the initial symptoms, but he could discern no clear difference in the stupor forms. Kirby further calls attention to the fact that benign stupors show a definite relationship to manic-depressive insanity, in that some patients passed directly from stupor to typical manic excitement, while in others a "catatonic" attack replaced a depression in a circular psychosis.

At this point, Hoch, whose ambition it was to describe stupor as a life reaction, took up the study which culminated in the appearance of his "Benign Stupor" (1921). This is unquestionably the most comprehensive contribution to the problem. He differentiated stupors into benign and malignant, allying the former with the manic-depressive and the latter with the schizophrenic. He calls attention to the fact that his terms correspond very closely to Newington's "anergic" and "delusional." The essential characteristics of his "benign" stupor are interference with the intellectual processes and with activity not only of spontaneous action but sometimes even of reflex actions, such as swallowing, or winking. The related catalepsy with its opposite, negativism, may or may not be present. The thinking disorder is a constant feature. If the patient is at all accessible it is possible to demonstrate either a failure or great impairment of intellectual functions during the attack with a partial or complete amnesia after recovery. Affectlessness is extreme, they are disininterested and their faces are masklike. A tendency to sudden inexplicable acts is a "catatonic" symptom. Clouston had previously called attention to the same explosive outbursts—"mental epilepsy."

Hoch found the physical symptoms to be vague, consisting of mild fever, endocrine disturbances and epileptoid attacks. He studied carefully the ideational content of benign stupor from utterances during the incubational period, during intermissions, and from memories (if any) after recovery. He found a surprising paucity of mental content. What thought there was dealt with death or the closely related rebirth phantasy. The usual setting was one of apathy. In order to understand the psychosis he felt that the delusions of the patients should be looked upon as symptoms subject to analysis, to classification and to the same correlation as the mental anomalies previously mentioned. Psychologically he considers stupor the simplest and most complete form of regression. He further notes the occurrence of a milder form of the above picture which he calls "partial stupor," as well as calling attention to the mild stupors in perplexity states as described by himself and Kirby.

In summarizing modern psychiatric trends Bumke points out "that catatonic syndromes in the narrower sense are not specific has been known for a long time; also that they are apt to follow any kind of injury, that qualitatively similar injuries would cause one brain to have a transitory psychosis and another to have a long lasting and even incurable defect and that the pictures in both would remain the same for a long time" (Menninger). Austregesilo calls this syndrome, which regresses to complete recovery, cataphrenia (Menninger). Strecker believes that Hoch's study of benign stupor has advanced psychiatry but he feels that "the organic etiological possibilities of stupor were perhaps too lightly dismissed." In a study of 38 cases diagnosed as schizophrenia but terminating in recovery Strecker found 7 cases of stupor or partial stupor. These, although they did not meet Hoch's clinical requirements of benignity, were not an infallible sign of a deteriorating process. The stupor, he states, must always be considered in its relations to the entire psychosis. White believes that Hoch's "condition of stupor is common in the course of melancholia and occurs as an episode more often than as a distinct form of the disease." Henderson and Gillespie feel that it is extremely difficult to differentiate clinically between the various forms of stupors. They consider that Hoch's attempted differentiation between what he calls benign and malignant, although suggestive, has really helped but little.



The foregoing historical survey of the literature will suffice to show the development of the study of stupor from its earliest recognition by Pinel to the present day. Although it has not been stressed it must never be forgotten that acute stupors can be seen in a great variety of clinical conditions and that various causes can precipitate stuporous reactions. Organic stupors and stupors of less specific toxic origin as well as those in which the stupor constitutes, psychologically speaking, an escape from an unbearable situation all admit of a favorable prognosis even though the clinical aspects may not be promising.

Strecker reports as benign the case of a woman who developed a stuporous condition following parturition and who is alleged to have recovered after 17 years. To the writer this case report is not convincing, for the patient, by the time the case was reported, had returned to her hospital. Some of Hoch's own cases, all of relatively short duration, are not particularly convincing either. In passing mention must be made of Froederström's case of stupor lasting 32 years and of Gadeliuss' lasting 11 years. Both, though protracted, are strongly suggestive of hysteria.

#### REPORT OF AUTHOR'S CASE.

The present case, also of long duration, has nothing suggestive of hysteria about it but rather illustrates the ease with which the benign and malignant stupors are confused, especially in the early stages.

The patient, Ida L., Manhattan State Hospital case No. 60428, was admitted by transfer from Central Islip, November 9, 1920, at the age of 36; born in New York, single, Hebrew.

The family history is irrelevant, save that the parents and siblings show emotional instability and early organic changes.

The early biological and cultural history is likewise without special significance. Menses began at 13 and were regular until their temporary cessation at 40. They reappeared at 46, and now at 48 are occurring scantily every six weeks.

Ida's personality is unusually interesting. Until the age of 9, she was a normal, well-adjusted child. At this time the mother died. Immediately after the mother's death the patient became shy and showed a tendency to remain alone in spite of the fact that her little associates sought her out. At 13, an orthodox stepmother joined the family group, and under her influence the child became deeply religious. At the age of 16, an intelligent brother-

in-law describes the patient as an unassuming girl, always smiling and cheerful, very shy, refusing absolutely, however, to go out or to have anything to do with men. Her father died when she was 17, and from this time on she lived alternately with her married brothers and sisters, cheerfully helping in their homes but refusing to go out to work. At 25 she showed no especial emotional reaction to the adored stepmother's death. When she was 32, her eldest brother succeeded in persuading her to take on work at home. Her employer became interested in the patient and soon proposed marriage. Naturally, the family approved, but the patient rejected him and thereafter she would have nothing to do with the outside world. By this time she had become religiocentric, reading only Jewish books and spending much of her time conversing with the older women of the family.

In April, 1918, she had an acute febrile attack, diagnosed influenza, during which she walked the floor day and night, took large doses of saline purgatives and refused food. She cried and screamed and expressed the wish to die. On the seventh day of her illness, the patient announced that she was dead and in her coffin and asked the family to nail on the lid. "Sister," she once said, "God is punishing me for the sin of masturbation." She finally became violent, talked of jumping out of the window, and threatened to kill her nieces and nephews if they were not taken away.

At the observation hospital she was dazed, confused, bewildered, depressed and at times fearful and apprehensive. Speech was rambling and disconnected.

On admission to Central Islip State Hospital, May 29, 1918, she was restless, resistive, only slightly accessible, showed evidence of depression, confusion, and apprehension. Her utterances during the first few weeks were disconnected, suggesting hallucinations or dreamlike experiences concerning murders and threats upon her life. Early in her two and a half years residence there she became mute. Throughout she required spoon feeding, and was untidy and uncleanly.

On November 9, 1920, when transferred to Manhattan State Hospital, patient was mute, and remained curled up in intrauterine position. When the bedclothes were drawn back she would cower deeper in an attempt to hide. When placed in another position she would immediately return to the intrauterine posture. Her manner was shrinking. She moved spontaneously and without retardation. There was no reaction to pin pricks. Her facial expression was vacant and drawn. Her eyes were kept so tightly closed that the lids were everted along the edges. She exhibited great resistance to having them opened. "Shnauzkrampf" and drooling were present. The sphincters were uncontrolled. She was entirely mute and would not write.

Physical condition negative. Temperature normal.

Progress notes show that by December, 1920, she had developed cerea flexibilitas. By March, 1921, she no longer required spoon feeding but would eat wolfishly, using her fingers. At this time the patient was out of bed, but would not use a chair, preferring to crouch in the corner of the room. She grimaced, drooled and continuously mumbled to herself but did not react as though hallucinating.

In October, 1921, she again required bed care, drooled, disrobed, assumed odd postures, kept eyes tightly closed and continued mute. She was gluttonous and just sufficiently in contact with her environment to jump out of bed upon hearing the food cart approaching. In August, 1922, mutism broken once when she asked relatives to take her home. There was no change during 1923.

During the next five years she was cared for by an older patient who fed her, led her to the toilet and gave her all the care a baby requires. When left to her own devices she would seek to hide in dark corners, remaining immobilized until led out. Save for the instance noted above she was entirely mute. She always assumed a constrained catatonic posture.

In June, 1928, she developed an attack of Vincent's angina with mild fever for which she was given three injections of neo-salvarsan. Following this she became brighter, more cleanly and began to write notes to nurses and to relatives in which she constantly requested to be taken home. By September, 1929, improvement was marked. She kept her eyes open, became clean and tidy, attempted to help with the ward work, spoke freely with nurses and patients, especially of religion and of her desire to return home. However, she communicated with the physician and her relatives only in writing.

In February, 1930 (during first interview with the writer), she presented the picture of an agitated depression with fear, and for the first time in 12 years she spoke to a physician.

Following a joint interview with the physician and relatives she began to talk freely. From then on her convalescence was rapid. Perhaps her own words: "Why, doctor, it is just like coming back from the dead," best describe the case at this time. Her whole life history was gone over with her, not once but many times, and a complete amnesia from April, 1918, to June, 1928, was found. She was unable to give any retrospective account of her illness, or mental content, if any, during her twelve years mutism. She said that her last recollection prior to the onset of her illness was seeing her nephew in khaki. Her relatives say that he was home the week before the onset of influenza. Her earliest convalescent memory is the pain in her gums associated with the attack of Vincent's angina. Subsequent to this she recalls even the minutest details of ward life. In order to orient herself she asked many questions, but has never assumed such information as her own recollection, merely saying: "So-and-so told me that but I do not remember." Upon one occasion she asked whether the war was over. At first she wondered why the ten year period of her life was a blank, but she soon gained partial insight.

She made such progress that she was paroled April 23, 1930, and at the end of a year's parole she was discharged as recovered. From then until the present her adjustment has continued good.

It is interesting to note that she now shows many more extrovert traits than she did prior to her illness. Insight is only fair as shown by her continued failure to fully understand the ten year hiatus in her life. This failure

she has attempted to rationalize by associating an attack of epistaxis with her recovery.

A psychometric test done April 17, 1930, gave her a mental age of 11 years, 9 months, with an I. Q. of 73. Complete laboratory studies made just prior to parole were negative. She had a hypertension of 180/100, which persists. Vision was absent in the right eye due to a cataract formation. This was successfully removed in August, 1931. Eye treatment and dental work necessitated much travel by subway, something she would never do prior to the onset of her disturbance.

#### COMMENT.

In the writer's opinion, this case of stupor is most unique. Not the least dramatic feature is the fact that the woman was dead to the world for ten long years, as dead as if the coffin in which she placed herself was literal and not a figment of the diseased imagination. Her psychological death, however, was not as sudden as it seems at first glance, rather it was the logical culmination of a gradual process of regression beginning with her mother's death. A proposal of marriage did much to hasten her flight from reality. Influenza made it complete.

A review of the symptom complex presented shows that the onset was characterized by depression, apprehension and agitation. She expressed ideas concerning personal unworthiness and portrayed her death. Then followed a ten year period during which there was an almost complete cessation of spontaneous and reactive motions and speech. All intellectual faculties were at a standstill. She was affectless and negativistic. Her convalescence was gradual and with the exception of a brief period of depressed agitation it came about by an attenuation of the stupor symptoms. Recovery has been followed by a complete amnesia for ten of the twelve years.

The writer feels that Ida's psychological death is merely a part of a larger drama—her life reaction—and that any attempt to answer the usual questions at the present time by interpretation of symbols would be purely speculative and without real value. Even if, at this late date, discussion of the underlying psychogenic causes is futile, there are certain aspects of the case which should be emphasized by comment.

For instance, the precipitating cause, influenza, as well as the mitigating factor, Vincent's angina, were both acute febrile conditions. Much work has been done upon the influenza of 1918-19

as a cause of mental disease. All investigators agree that its virus was particularly neurotoxic but none have been able to explain why. Just why the second febrile attack, the only one during the ten year period, should have initiated recovery is likewise unclear. Upon this ability of febrile conditions to ameliorate mental disease is built the whole serotherapeutic and radiothermic approach in vogue today. Clarke, as early as 1895, noted the favorable effect of the then prevalent typhoid on stupor cases. Courbon attempts to explain the mechanism whereby a functional condition is ameliorated by somatic diseases.

The long duration is doubtless the result of the interaction of the unknown psychogenic factors with somatic toxicity. All cases in which there is an infective exhaustive element run tedious courses; usually, however, a matter of months rather than years. Attention has been called previously to the similarity of the agitated depression seen at the onset and during convalescence.

To those who accept Hoch's conception of benign stupor as a subdivision of manic-depressive insanity, the diagnosis is clear. With its death ideas and stupor followed by complete recovery with amnesia, the case is a classic. Upon reviewing the case after recovery one wonders what, if any, are the features suggesting good prognosis? Are they applicable to all cases of stupor? If properly evaluated would they foretell good outcome even after a lapse of years? The pyknic habitus, the circumscribed range of activity rather than a really seclusive make-up, the toxic precipitating cause, the acute onset, the entire absence of any outburst of catatonic excitement and the purity of the syndrome presented, all point to a good prognosis and are all applicable when considering the prognosis in any case of stupor.

In conclusion, the writer would like to draw attention to the fact that little or no blunting of intelligence occurred during Ida's sleep. On the other hand the ten year obliteration of consciousness seems to have been as refreshing to her as a good night's sleep is to the ordinary intelligence. The patient herself recognizes that she is more in contact with reality than ever before. Just recently she remarked, "I now see all I have missed in life. I am trying to make up for lost time."

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## THE GENETIC RELATIONSHIP OF BLOOD GROUPS AND SCHIZOPHRENIA.\*

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### PURPOSE OF INVESTIGATION.

The purpose of this investigation is to ascertain whether or not there is any possible correlation between the inheritance of blood groups and schizophrenia. It is an attempt to discover whether a geno-typically predetermined characteristic of the individual (in the blood group) could be linked with an unknown element, in this case the questionable gen or gens in schizophrenia. Although the gen is only one hereditary characteristic of the individual and is capable only of the transmission of a single isolated characteristic, yet it has been shown by Snyder,<sup>1</sup> that even considering the small number of offspring in families and in the absence of controlled matings, definite conclusions as to linkage can be drawn from the study of three generations in a number of groups.

Since this definitely implies the necessity of following family groups for a decade or two, it seems advisable that a hospital should undertake the elucidation of this problem. Such is being done in this instance and a preliminary report of such an investigation is given herewith.

It is realized that, due to the large number of chromosomes in man (48), free assortment of any pairs of characters studied is much more likely to occur than linkage between them. Moreover, it has never been conclusively shown that schizophrenia or the schizophrenic disposition is dependent upon the transmission of the gen or gens as predetermined hereditary constants of the idioplasm.

\*Read at the eighty-ninth annual meeting of The American Psychiatric Association, Boston, Mass., May 29-June 2, 1933.

Furthermore, the fact that there are huge numbers of gens present adds to the improbability of there being a correlation between blood groups and the inheritance of certain psychic phenomena. Yet linkage in man seems to be a fairly definite phenomena, as witnessed every day in the common observance of a correlation between blond hair and blue eyes.

From our major premise certain corollary questions arise which can be formulated as follows:

- (1) Is there any difference between the schizophrenic and the normal individual as to their belonging to a specific blood group?
- (2) Will it be possible to prognosticate the appearance of this psychosis by determining the blood groups of individuals in certain family groups?

#### BLOOD GROUPS IN SCHIZOPHRENICS.

Some of the above questions have attracted investigators and definite attempts have been made to answer them. Most of the literature deals with the problem of whether there is or is not a correlation between blood groups and schizophrenics. Curiously enough almost all of the investigators come to one of two conclusions. They show either that the frequency of the various blood groups is the same as in normals, or that there is an increase in the B agglutinin and thus an increase of groups B (III) and AB (IV).

In America, Raphael, Searle, and Scholten<sup>2</sup> found the blood groups among 800 schizophrenics to be the same as those for the general population. In Germany, Saleck<sup>3</sup> from a study of 4521 inmates and 1918 normals, concluded that there was no correlation between blood groups and disposition towards certain mental diseases.

Wilczkowski<sup>4</sup> in Poland, Snyder<sup>5</sup> in America, Chominskij and Sustova<sup>6</sup> in Russia, Solá<sup>7</sup> in Spain, Von Pankratov<sup>8</sup> in the East Fattovitch<sup>9</sup> in Italy, and in Germany, Kruse,<sup>10</sup> Fr. Meyer<sup>11</sup> and Somogyi and Angyal<sup>12</sup> are also of the same belief, concluding that there is no relationship between blood groups and various types of mental disease in general or schizophrenia in particular, and that the distribution is the same in the general population as it is in dementia præcox.

On the other hand, Gundel,<sup>13, 14, 15</sup> in his investigations in Schleswig-Holstein, concluded that in schizophrenia there is a definite increase in group B (III) and group AB (IV). Böhmer<sup>16</sup> in another province of Germany, Ansel and Halber,<sup>17</sup> and Straszynski<sup>18</sup> in Poland, Canuto,<sup>19</sup> and Palmieri<sup>20</sup> in Italy, and Pilcz<sup>21</sup> in Vienna support this conclusion. Partially in accord with the latter belief are Kasëvarov<sup>22</sup> in Russia, and Rubaschkin and Leisermann<sup>23</sup> in the Ukraine who from their investigations found a well-pronounced increase in blood group AB (IV), with the other groups slightly under normal. Pennacchi<sup>24</sup> in a study comprising only 162 cases concluded that group B (III) was the most often present.

Considering the number of investigators in the various parts of the world, the constancy with which agglutinin B was present more often in schizophrenics than in the normal population was striking. If the findings were but random, one would expect to find reports of agglutinin A being increased over that of the normal; Würz<sup>25</sup> in an investigation of 334 schizophrenics stated that group B (III) is less represented than in the normal population. Proescher and Arkush<sup>26</sup> in a study of blood groups among 2104 mental patients in California found a constant ratio of 4:2; 4:1; corresponding to the respective blood groups, a different ratio from that of the general population. They moreover reported an increase in group O (I) for schizophrenia.

In a study of blood groups in relation to constitution, Tedesco and Asuni<sup>27</sup> reported that group A (II) seems to be more often represented in the pyknic type, and groups B and AB (III and IV) predominate above the normal for the asthenic. Is there from this a definite suggestion of a correlation, for those who found an increase of agglutinin B in schizophrenia? Wilczkowski<sup>28</sup> in an investigation of four families claims a simultaneous heredity of schizophrenia and the constant serum characteristic. He stated that it seems probable that there might be hemobiological indications for the presumption of an imminent psychosis in families in which one of the parents is afflicted with a psychosis and the two parents do not belong to the same blood group. On slightly more evidence—a study of five families—Toulouse, Schiff, Weismann and Netter<sup>29</sup> state definitely that blood groups do not shed any light on hereditary constitution or indicate whatsoever a morbid

predisposition. Thus nine families have been studied by two different groups of investigators who on their scanty evidence come to strikingly opposite conclusions.

#### PRESENT STUDY.

##### METHOD.

The method used depends primarily upon studying "intact families" of which one or more members are schizophrenic. By an "intact family" is meant a family of at least two generations, in which all members are living. The schizophrenic members can be either parents or offspring.

Every patient that comes to the hospital is asked whether all the members of the family are living. The social service department has been cooperative in obtaining a detailed family history for every admission. In spite of this careful checkup, not over one of every 35 families investigated are chosen for study.

Letters are sent to the relatives explaining the purpose of this investigation and asking them to call at the hospital at an appointed time. When they arrive, a cell emulsion is made by allowing a drop of blood to fall into a tube containing about 2 c. c. of an isotonic salt solution. In all instances blood groupings were performed within an hour according to the accepted microscopic hanging drop method, and classification recorded according to the method of Jansky.

The technique of this method requires the presence of test serum of groups A (II) and B (III). On a carefully cleaned cover slip is placed a drop of A serum, and to this is added a drop of the cell suspension. The cover slip is then inverted over the concavity of the hanging drop slide which had been previously rimmed with petrolatum. A similar procedure is done for that of serum B.

The slide is then tilted and rotated gently so that the cells are uniformly distributed. This is repeated at two minute intervals. Although at room temperature, agglutination can be seen usually in 10 to 15 minutes, final readings were not made until the end of half an hour. Only definite clumping as seen under the microscope was accepted as evidence of agglutination. In those cases in which pseudo-agglutination was suspected, or rouleaux formation present, the entire procedure was repeated. If doubt were still



present, lecithin was added which deprived the serum of its rouleaux forming properties without affecting the iso-agglutinins.

Classification was then made in the following manner. If neither test serum agglutinated the cells, the blood belonged to group O (group I Jansky). If only the serum of B agglutinated the cells, the blood belonged to group A (II). If the cells were agglutinated by group A serum only, the blood belonged to group B (III). If both sera agglutinated the cells, the blood belonged to group AB (IV).

#### DATA.

To date 31 intact families have been studied containing a total of 158 members. Of these, 21 have been selected each containing one or more schizophrenic siblings. In this group there are 121 individuals whose blood groups are known; 66 of them are males of which 45 are sons; and 55 are females of which 34 are daughters. In these families there are 23 schizophrenic patients, 16 of whom are sons, five daughters, and two mothers.

On observing Table I it is noted that the blood group percentages vary from the figures usually given for a mixed population. In America the group percentages as determined by Hirszfeld<sup>30</sup> give a higher incidence of group I and a much lower incidence for group III. However, since it is well known that the group percentages vary greatly in different parts of the world (group II is high in Western Europe and group III in Southern Europe and Asia), the percentages obtained are probably but indicative of the various races present in this study rather than suggestive of any abnormal distribution of groups in schizophrenic families.

Table I gives the relative incidence of the various blood groups for all individuals investigated, and also separately for the psychotic and non-psychotic members. Comparing these latter two classes, only group III seems to show a perceptible difference. The relative frequency in this group for the normal is 23 per cent, and for the psychotics it is 35 per cent. Whether this may be regarded as a true difference is questionable in view of the small number of schizophrenics studied.

Table II is an analysis of the blood groups in regard to the sex of the individuals. From this table it is readily seen that there

TABLE I.

Blood group.	All members of families in study.		Normal members.		Schizophrenics.	
	No.	Per cent.	No.	Per cent.	No.	Per cent.
I .....	43	35	36	37	7	30
II .....	39	32	32	33	7	30
III .....	31	26	23	23	8	35
IV .....	8	7	7	7	1	5
Totals .....	121	100	98	100	23	100

TABLE II.

## INCIDENCE OF BLOOD GROUPS OF MALES AND FEMALES.

Blood group.	Male.		Female.	
	No.	Per cent.	No.	Per cent.
I .....	24	36	19	35
II .....	19	29	20	36
III .....	18	27	13	24
IV .....	5	8	3	5

TABLE III.

## SIMILARITY OF BLOOD GROUPS IN PARENTS AND CHILDREN.

	Like father.		Like mother.		Like both.		Like neither.		Totals.
	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	
Schizophrenic sons.	6	37.5	6	37.5	0	0	4	25	16
Non-schizophrenic sons .....	6	21	16	55	4	14	3	10	29
Schizophrenic daughters .....	0	0	3	60	1	20	1	20	5
Non-schizophrenic daughters .....	10	34	11	38	2	7	6	21	29
Total all schizophrenic children .	6	28	9	43	1	5	4	24	21
Total all non-schizophrenic children	16	27	27	47	6	10	9	16	58
Total all sons.....	12	27	22	49	4	9	7	15	45
Total all daughters.	10	29	14	41	3	9	7	21	34
Grand total all children .....	22	28	36	45	7	9	14	18	79

is no percentage difference of any significance as to the distribution of these individuals in the blood groups in relation to the factor of sex.

Table III is an analysis of the distribution of the psychotic and non-psychotic siblings in relation to the parents according to blood groups. It is noted that, disregarding sex, the percentages of the psychotic and of the non-psychotic siblings to the parents are the same. When sons and daughters are regarded separately, the percentage of psychotic sons following the blood group of the father and the percentage of psychotic daughters following the blood group of the mother are greater than the corresponding percentages in non-psychotic sons and daughters. It appears that a distinct trend is shaping here, which however will require verification on a larger scale study.

#### CONCLUSIONS.

(1) A method of investigation is outlined whereby information may be obtained on the problems of heredity of schizophrenia and of blood groups, and whether or not there is any genetic relationship between them.

(2) From the review of the literature, no definite correlation could be established between blood groups and schizophrenia, although there was some evidence for an increase in those groups containing the agglutinin B, groups III and IV.

(3) From an analysis of 21 intact schizophrenic families the following were indicated:

(a) There was no atypical distribution of blood groups, save a problematic increase in group III for the schizophrenics.

(b) The distribution of blood groups according to sex showed no significant differences.

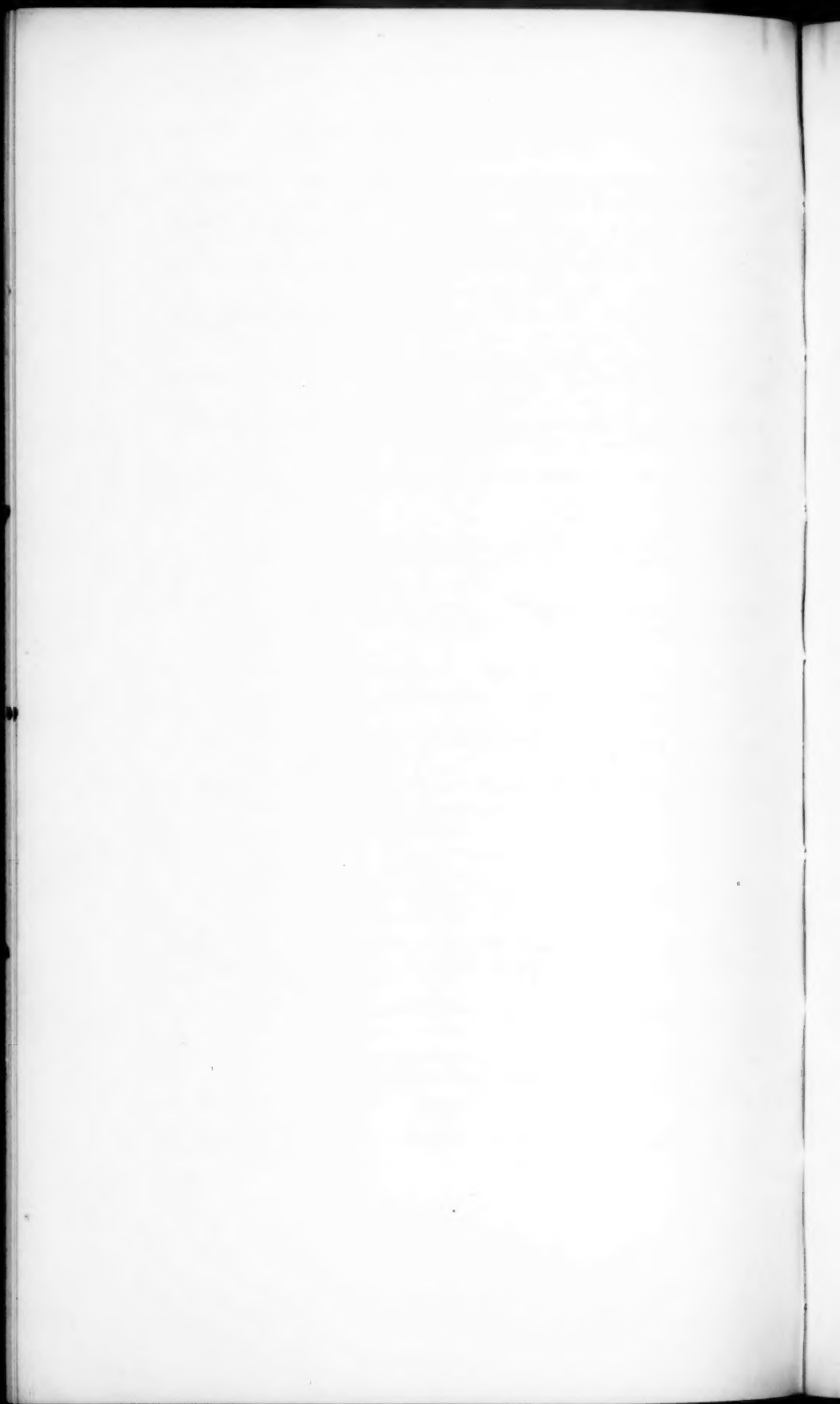
(c) There was a trend indicating a higher incidence of schizophrenic sons following the blood group of the father and of schizophrenic daughters following the blood group of the mother than in normal sons and daughters of the same families.

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## THE NOSOLOGICAL POSITION OF PANIC REACTIONS.

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The theory of disease entities brought order into the chaos of many seemingly heterogeneous observations. Methodically arranged thinking is necessary in science, but it menaces and inhibits investigation when it becomes too rigid a systematization at the expense of dynamic understanding. Apparent entities have to be reconsidered and if necessary viewed from additional angles.

In any illness the various phases, and not only the course of the illness as a whole, should be considered. This leads us from a purely descriptive approach to a closer study and analysis of the various factors, somatic and psychobiological, and the situations which caused the reaction. From this study we see the need for protection of the patient during certain phases of the illness and the need for inquiry into disturbing factors. Such a study also enables us to discriminate between the essential and the merely incidental and to reach a better understanding of the patient's personality and his illness as a whole. With this knowledge we can determine the individual prognosis more accurately and we are also better equipped to gain the patient's cooperation and so establish the necessary foundation for treatment.

From such a point of view I recently discussed panic reactions. I did not propose nor wish to create a new entity or "disease," but attempted to draw the physician's attention to one of the interesting and important reactions which certain constitutional make-ups show to specific life situations—like so many important psychiatric items known also in daily life, but apt to figure at one time as the leading, or at another as only an incidental phase of a psychosis.

Panic can be defined as a maximal fear state which results from prolonged tension and insecurity. In the state of panic the feeling of insecurity may reach a high degree and lead to many projections and more serious personality disturbance (in the sense of disintegration).

In daily life as well as in psychobiological and psychopathological discussions we use the terms fear, anxiety and panic freely, but not with accuracy as to the various meanings. In my discussion I use fear in the sense of the German "Furcht" and anxiety in the sense of "Angst."

The distinction which is used in German psychiatry points out that fear is the emotion which is caused by a danger or threat actually close at hand. Anxiety is more vague and is not linked to anything consciously definite. It seems to be connected with vague anticipation. In other words, fear has a known content and is immediate; anxiety is consciously contentless and more or less vague. Skeat points to this when he gives the derivation of the word fear from the old German word "Faer," which means a sudden peril or danger and was originally used for the danger of traveling. Anxious is derived from the Latin word "anxius" which means distressed, and more akin to "angere"—*i. e.*, to choke, to strangle. He therefore gives as English equivalents, distressed, oppressed, much troubled. "The fact that fear and anxiety are often blended in a complex emotional state should not lead us to ignore the distinction between them." (McDougall.)

In intense fear no form of adjustment may be possible except evasion or escape, and in extreme cases even these are impossible. It is these extreme cases which we designate by the term "panic." This term is an abbreviation of a "panic fear"—a fear believed to be inspired by the god Pan, who was reported to be the cause of sudden and excessive fear.

In a panic the person "loses his head" completely. He does not know how to deal with the danger or even where the danger comes from, and he therefore does not see an escape except in flight. In situations which do not offer this escape such a person may resort to desperate acts, such as attacks on people in the environment, or may even seek an escape in death. An emotional explosion of this type never occurs suddenly or without cause, as some observers claim, but is the climax in a prolonged state of tension. This view is supported by numerous observations in the last war. Possibilities for panic are further increased by lack of opportunity for action and unfavorable physical conditions (fatigue, undernourishment, etc.). Individual panics were frequently observed in troops in the

trenches which had been exposed to prolonged shell-fire. Action releases the tension, and the counterpart of panic is seen in cases of "pathological bravery." Cases have been described of men who have been cited for bravery and who, at other times, under similar conditions, went into a panic. Good illustrations are found in the many war novels which have appeared in the last 15 years.

A man who is worried and is under tension may easily become suspicious. In the panic this not only leads to misinterpretations, but to hallucinations and delusions of persecution. After the acute stage has passed, suspicions and delusions of persecution of various degrees may persist for months.

Panic reactions of the paranoid character have not been mentioned frequently in literature. They are occasionally discussed with other paranoid reactions.

Many cases which in older literature were described as *raptus melancholicus* are undoubtedly panic reactions, probably best described by Schwartz and Maudsley, the latter using the term melancholic panic. Others spoke of melancholia furens and mania furens, while French authors distinguished *melancholie panophobique* (which corresponds to a depression with panic outbursts) from agitated depression. Case presentations were rare until Wernicke in 1895 presented a paper: "Über Angstpsychosen" (concerning anxiety psychoses). He described a special kind of depressive psychosis, characterized by marked and extreme anxiety which dominates the whole picture, with many delusions and hallucinations threatening the patient's life, honor, or denoting self-depreciation. A hypochondriacal type was singled out as a special form of anxiety psychosis. Agitated depression was considered as part of the anxiety psychosis and separated from melancholia.

The duration of such a psychosis is short (1 week to several months) and various motility symptoms may complicate the picture. The whole activity of the patient is directed by his anxiety. If productivity increases, overtalkativeness and even flight of ideas may occur. These latter symptoms especially caused Kraepelin and his followers to maintain that anxiety psychoses belong to the group of mixed affective psychoses, insisting that anxiety plus flight of ideas, plus increased motility leads to the picture of anxiety psychosis and agitated depression. Anxiety was considered a depressive

affect. Wernicke considered the continuous motor restlessness as characteristic of anxiety, while Kraepelin considered the motor activity the manic factor in anxiety.

The attempt of the French school (Lalanne) to distinguish between *angoisse* as a sensation of constriction without emotional disturbance, and *anxiété*, which is a feeling of indescribable insecurity, has not led far. More important is their consideration of the accompanying feeling of anticipation and being powerless to evade the threatening danger, which in its latest formulation is given by Benon, who stresses that we have to distinguish in panics the cases which anticipate the danger in the future (perspective). This type is less frequent in depressions than the panic which sees the danger in the past (retrospective). He, like the other French authors, designates panics by the term *raptus*.

Many authors noticed panics in the "chronic forms" of paranoia and schizophrenia. The persecutory character of panics was stressed, in contrast to the self-depreciatory depressions.

A frank dynamic approach in which the individual reaction was analyzed caused Kempf to form the entity of "acute homosexual panic," which he considers as a distinct stage in the illness. The cardinal symptoms are: (1) panic and automatic reaction; (2) defensive compensation against the compulsion to seek or submit to assault; and (3) symbols used by the erotic affect and the disturbance of sensation which is caused by it. He feels that the prognosis for the attack is good, but without adjustment it will lead to a schizophrenic end reaction. The mechanism of the panic is the "pressure of uncontrollable perverse sexual strivings." It threatens to overcome the ego (self-control) because the need for winning social esteem has been pushed to an eccentric adjustment. He believes that weakness of the ego may be due to fatigue, debilitating fever, misfortune, loss of love-object, homesickness or seductive pressure of some superior or erotic companion. He also describes panics in various schizophrenic end reactions.

Of interest are the panic attacks which we observe in cardiac diseases. They have been described as angiospastic twilight states (Ziehen) and paroxysmal anxiety attacks (Leyser). Two types of reaction to heart diseases are distinguished: delirious reactions, or anxiety as the main psychic feature. (The vague uneasiness of

organic heart disease gives rise to anxiety involving the whole personality, which reaches a climax in panic outbursts.)

Studying the literature on panics, one is impressed by the desire of most authors to form new disease entities. Fear and panic may occur under the most varied circumstances. It therefore must be our task to determine the meaning and delimitations of the term panic in psychiatry.

Thinking in terms of disease entities has been replaced in modern psychiatric thinking by reaction types. We try to understand the individual reaction by a study of all the factors and to group similar reactions in reaction types, but always with due attention to features caused by the peculiarities of the person involved. A dynamic approach demands an analysis of the various symptoms and reactions, their development and relation to the personality make-up, and analysis of the formative factors. A cross-section study—*i. e.*, study of the symptoms and the personality as we can observe them—is very important, but will not lead us far in a deeper understanding of the illness.

In a genetic-dynamic approach we try to determine the onset and development of the various features as well as the illness as a whole and the setting in which it occurs—*i. e.*, the psychobiologically integrated personality as the organism in action with its constitutional (inherited or at least ingrained) factors, including present as well as past and attitude to the future, exogenic and situational, as well as more personality determined factors, with overt and implicit behavior. In the development and process of such an illness we may be able to see phases (*i. e.*, successive modes of behavior indicating a definite stage of change). Such a discrimination, while it may seem arbitrary to the untrained mind, offers itself quite naturally. The analysis of the various phases of an illness permits us to get closer to the dynamic factors. These various phases then have to be considered in their interrelations to each other, forming the unit which we call illness. Again, the illness itself is only a phase in the person's life. The development of each personality shows also various phases. We are apt to talk only of the change of personality during adolescence, but there are also distinct changes later in life. Dominant features may merge into less obvious ones, until the latter gradually assume a leading rôle.

Kraepelinian and post-Kraepelinian psychiatry has unfortunately been too much influenced by the consideration of disease entities, stressing onset, course and outcome, and considering the various phases in the course of an illness of secondary importance or even neglecting them completely. Not only the scientific approach but also the treatment has suffered greatly due to this too sweeping conception. Since Meyer's "Attempt at Analysis of the Neurotic Constitution" (1903) the so-called pre-psychotic personality has attracted great attention, but this conception was soon simplified, as if human personalities could be classified according to two psychoses. In psychiatry this rigid and fatal classification system has had to be replaced by elastic and dynamic reaction types. In psychology a broad characterology (groupings based on a study of the psychological personality) will have to take the place of a simple, primarily dualistic typology (classifying human personalities in two or more types).

The studies of panics during the War suffered frequently from the conception that the phase of fear and its subsequent development was an entity, and little attention was therefore paid to the personality involved and its experiences and anticipations. The result was a controversy for and against a new group of war psychoses, without the necessity of looking for similar reactions under similar circumstances in daily life. There are fortunately, however, publications in psychiatric and belletristic war literature which describe the personality and the situation which caused the panic reaction. The main factors and symptoms are herewith summarized: Under the constant influence of shell explosions, forced to accept the situation passively and without any possibility for counter-action, a person develops a tension which gradually diminishes his self-confidence. Hoche made similar observations in the civil population during the repeated air raids to which the town was exposed over a long period of time. Slight anxiety developed, which was increased through the "forced passivity of endurance of frightening episodes" with no possibility of personal counter-action as a psychological release. Complaints of fatigue and restless sleep or fearful dreams frequently accompany this anxious tension. The facial expression indicates sad and gloomy tension. Increasing acuity of hearing and sensitiveness to noises, a bitter taste in the mouth,



nauseating sensations in mouth and stomach, a feeling of pressure in the stomach and diarrhea characterize the further increase of tension. The sleep is restless, disturbed by anxiety dreams with a sudden startled or frightened awakening. If the situation changed, the symptoms usually disappeared after a few days. Many complained also of headache and vertigo and marked irritability. The climax is an outburst of frightened activity which may lead to aggression or flight. Such a soldier suddenly jumps from the trenches toward the enemy, believing that the signal to attack has been given or that his troop has been attacked by the enemy. Visual or auditory illusions and hallucinations may influence him in such a fear state. Many will run blindly without being able to consider the most reasonable way of escape. They lose their heads and are driven by their impulses. When out of the zone of danger they gradually regain their equilibrium and ability to judge the situation correctly.

When this tension reaches the climax, these individuals have to run regardless of the danger to which they may be exposing themselves. Many cases of spontaneous desertion were caused by panic. Not infrequently hallucinations occur and persecutory voices are heard. The mood is described as changing easily, but outstandingly self-depreciatory. These persons are tense, irritable and suspicious, frequently perplexed and indecisive. The acute symptoms usually disappear in a few days to a few weeks after removal from the zone of danger, but a tense and irritable condition may last for several months.

In our own study we had to broaden the panic conception. It was recognized that homosexuality is not the only, and often not even the leading, factor in producing panics such as Kempf had postulated. A careful study and analysis of large case material proves that a great variety of factors and situations may produce a tension in certain constitutional make-ups, and that panic is the climax of a tension. In this we can see the common denominator of all the panics in war and peacetime,\* in catastrophes produced by nature as well as by man. The ease and self-confidence of a person

\* I purposely avoid here a discussion of the panic of the mass. Mass suggestion and fear infection are two powerful factors which work similarly on a large group which has been under anxious tension over a certain period of time and thus had their confidence undermined.

may be shaken by situations which originate within himself, threatening situations from the instinctive or from the more ethical level. Powerful threatening conditions cause the reaction in well-balanced men, while often minor difficulties will produce this result in a less well prepared or previously damaged individual.

We may define panic as the climax of a long tension, caused by an unbearable situation in which the patient cannot see the possibility of successful counter-attack or escape. It is the reaction of a person who has been enduring attacks, feeling himself constantly exposed to danger and losing security and self-confidence. The resulting mood is fear, terror and despair, suspicion of everything and everybody.

In speaking of a panic reaction, we have in mind not the individual panic outburst but that whole phase of the illness which is characterized by tension leading to symptoms which indicate a feeling of insecurity and the patient's reaction to it. Fear and uneasiness are always present, but a panic outburst may or may not occur. There are slight panic reactions which never go as far as full-fledged panics but which, from a genetic-dynamic point of view, can be recognized as belonging to the same group.

The nosological position of panic reactions is therefore not uniform, and each reaction has to be studied as such and grouped accordingly. I proposed the distinction between leading panics in tension depressions and in depressions with uneasiness and anxiety. A third group is formed by panic reactions which are merely incidental and transient phases in another illness. They may occur in various settings and are produced by minor situations. From a formal point of view we can distinguish paranoid panics from those which disorganize \* the whole personality and which lead, therefore, to symptoms which one would ordinarily consider schizophrenic.

Panic may be the climax of a tension state which may or may not be accompanied by a more or less depressive mood. In the whole picture not depression but tension is leading. These reactions are of attack nature and are frequently recurrent. The various attacks

\* By organization I mean the way in which a living being is organized as an integrated whole. Disorganization indicates the disturbance of integration.

in the same individual may be similar, but are not necessarily so. There are cases where attacks of tension and panic were preceded by more depressive attacks, and others where depression was clearly present but overshadowed by tension. Panics which are the climax in tension depressions and tension states might be considered panics in the narrower sense.

It is questionable whether the feelings of tension and uneasiness are related to the depressive affect. In his teaching A. Meyer makes a distinction between pure and impure affects. Elation and depression in their many varieties belong to the first group. Tension, anxiety, fear, panic, suspicion, hate, are impure affects.

In modern psychiatry little attention has been paid to the impure affects. They have been too much taken as incidental and therefore not worthy of study and analysis. Jaspers justifiably complains that psychology has analyzed affects very imperfectly and tries to give a methodological orientation. An important phenomenological distinction is that between affects and emotions which deal with definite content, and the contentless, objectless affects. The latter are frequent in pathological conditions. Patients often put a content into these contentless affects later, which may misguide the observer. (Jaspers speaks of injecting a content into one's feeling = *hineindenken*. He discusses as contentless affects: anxiety, tenseness and ecstasy.)

Anxiety has been studied to a far-reaching extent by Freud. He arrives at the conclusion that anxiety serves primarily as an indication of a danger situation. His analysis deals with anxiety and not with fear in the sense which I used in my presentation of panic reactions. That Freud is clearly aware of the distinction between fear and anxiety is seen from his statement that anxiety "has the character of indefiniteness and lacks an object; the correct usage of language changes this term, after anxiety has found an object, and replaces it then by fear." I hope that a later publication will offer me an opportunity to discuss fear and anxiety.

Impure affects are most frequently observed in schizophrenic, and especially in catatonic, conditions. It is, on the other hand, not justified to use them for diagnostic evaluation except in relation to all the other symptoms and the development of the illness. A. Meyer's warning has to be kept in mind—that there are no specific

schizophrenic symptoms. The whole setting has to be considered. "Where the affects are *impure*, described as nervousness or tension, or fear and apprehension, or suspicion, more or less corresponding distinctive *content disorders* are usually also predominant. . . . The older psychiatrist tried as far as possible to distinguish primary and secondary affect. I am inclined to put the emphasis on the purity of affect, as opposed to the presence of tension disorders, and the latter are then scrutinized for evidence of the occurrence of forced-looking reactions, and especially the tendency to incongruities."

The Kraepelinian school is still inclined to consider the impure affects as mixtures of pure affects. Deeper and more searching investigations which will not be satisfied with a descriptive study but will consider the dynamic factors, will gradually clarify the nature and significance of impure affects.

Tension in its more marked degrees can be recognized by the patient's strained expression, signs of hastiness and restlessness in gestures and actions, husky or often too loud or staccato speech, slight tremor of fingers and facial musculature, vasomotor symptoms (pale skin, with easy changes from blushing to pallor, cold perspiration, dilated pupils, dry mouth and constriction of the throat, feeling of oppression and difficulty in breathing, increased pulse rate and heart action). The vasomotor symptoms point to a certain relation with anxiety, but there are other symptoms which lead me to distinguish between tension and anxiety. In emotional tension we also notice tension in our muscles and definite sensations which lead to paraesthesias expressed in various hypochondriacal complaints. In both tension and anxiety we find pressure in the cardiac region and fullness of the stomach, tendency to diarrhea and increased frequency of urination. The head sensations are more marked in tension, expressed by dizziness or a feeling of pressure in the head. Some feel as if a blood-vessel were breaking in the head or as if there were a band around the head, in a less marked degree, a tight feeling in the head. In others fatigue is the outstanding complaint. The patients are aware of definite thinking difficulties. These symptoms may lead to a hypochondriacal invalid reaction. Panic will result if insecurity is an important factor.

Tension, with its symptoms of irritability and fatigue, is usually described under neurasthenia. Slight panic reactions can be ob-

served in this setting as well as among the other psychoneurotic reactions. They are incidental reactions and of short duration, but deserve attention therapeutically and demand a careful analysis of all the factors involved. Short-lived panic reactions are infrequent in anxiety neuroses. As I have stressed, fear and panic, both with a definite content, are fundamentally different from the contentless anxiety.

Anxiety may also lead to a climax, but this is different from a real panic. It is in the form of an explosion, a discharge (abreaction) of the tension which has accumulated. The symptoms are screaming or smashing of an object, and the whole incident lasts only a short time. These temper tantrum-like reactions are often observed, especially in schizophrenics.

We frequently observe anxiety attacks in tension depressions. Only when tension and apprehension reach a certain degree, when fear and insecurity have developed, will the patient react with a panic. The occurrence of anxiety attacks might support Aschaffenburg's theory that tension, worries and anxiety are different only in degree. Our own studies have not led to definite conclusions.

We have occasionally observed tension reactions in several members of the same family. Other patients have had recurrent tension psychoses with recovered intervals. Some of these patients who showed definite depressive features have a family history of depressions. The attack form of these illnesses and the constitutional factors caused me to include tension psychoses among the affective reaction types. It is true that morning-evening variations play a less important rôle in tension psychoses. Instead of the improvement in the afternoon we usually notice an increase of tension and therefore of fatigue. The strain of carrying on in a group in which the patient feels insecure is probably one of the factors. It is, on the other hand, interesting to note that in states of fatigue and exhaustion, tenseness and anxiety and other impure affects are often noticed. It is probably best explained by a lowering of the whole resistance and a reaction of self-preservation. Whether direct influences on the cardiovascular system precipitate these symptoms needs to be investigated. Fatigue explains partly the increase of tenseness in the evening. Tension and fatigue form a vicious circle.



Tension depressions are attack psychoses in which impure, instead of the pure, affects dominate the picture. This brings up the recently discussed question, whether affects are the fundamental features in what we call affective psychoses. Some of the differences in various groups of affective reactions can be explained by a study of the constitutional make-up.

Panic is the fear reaction to a situation in which escape by flight or avoidance by caution is impossible or, as many patients put it, the feeling of "being caught in a trap." Persons who react with panic are of the conscientious and ethical type who have high regard for and need for distinguishing between right and wrong. They frequently either lack confidence in their ability to live up to their ideals and expectations or develop this insecurity. The various situations which cause the panic reactions described in a previous article include sexual, financial and philosophical insecurity, conscientiousness and inadequacy reactions. These individuals are unable to adapt to specific situations and are overwhelmed by the over-strain or by a feeling of having failed. In toxic conditions we frequently deal with something similar and we can notice the same defeatist reaction in toxic and delirious panics. The content depends then on whether personality features are dominant or whether the fear and panic are determined more by the effect of the toxic conditions. (To the first group belongs the case of a man who reacted with a homosexual panic to the taking of rectal temperature during a cardiorenal delirium.) Panics determined more by toxic than by personality factors are observed in alcoholic hallucinosis and in many other toxic conditions. These panics have more of a situational interest, with delusions of persecution of a general type.

A fundamental feature is the patient's need to live up to an ideal. This is expressed in genuine conscientiousness, if the ideal is duty. It is different from the more superficial type of conscientiousness, which results from lack of confidence in one's own ability or from the desire to please others. Persons with this need of reaching an ideal become panicky when they feel that they lose hold on what is essential for it. The ideal may be an ethical, social or financial position or their body welfare. These patients also often have a high sense of responsibility which causes them to take more upon them-



selves than they are actually able to carry. Any of the above described situational panics can therefore result.

The feeling of insecurity is based upon experiences of the past to which the patients have not been able to adapt themselves and about which they frequently worry. Inability to forget mistakes of the past is another characteristic feature, and fear of being unable to manage the same or similar situations better in the future produces the panic. In sexual difficulties, for instance, it is the impending demand of having to do the same thing against one's wish.

Anticipation is another important factor. This tendency, as well as indecision, develops into a habit, but both tendencies are no doubt part of the constitutional make-up. Many patients show marked perseverance in pursuing their goal and are known as successful and energetic persons, but they lack the ability to settle the problems which are closest to them. They cultivate a faulty type of imagination—*i. e.*, picturing themselves constantly in dangerous situations and trying in vain to make plans for escape in case of disaster, thus weakening their strength of resistance. The indecisiveness is often due to their anticipatory tendencies. Many do not anticipate difficulties only, but also pleasure with the same intensity. Their emotional life, therefore, seldom reaches a level of ease, and tension and restlessness and an unhealthy type of overactivity result.

These patients are usually reserved people who never share their problems with any one else. This is not necessarily due to distrust, although many of them are self-conscious persons who are not well adjusted to the group. They have always been concerned about the impression they make on others and, although having a need for social contact, do not feel at ease in a crowd. They are often described as apprehensive, timorous and unable to expose themselves to criticism. They are sensitive to interference with what they consider their self-esteem and easily hurt in their feelings.

Many of our patients are rigid personalities and their rigidity makes an adjustment before and during the psychoses almost impossible. Rigidity is only partly a constitutional feature—to a large extent it develops during life. To it belong exactness and perfectionistic attitude and wanting things "just-so." A distinction between what is constitutional and what is due to attitudes and reactions to life experiences is difficult. Our knowledge of the de-

velopment of personalities is limited, partly because we have to depend on the retrospective account obtained in analysis of the person, with its many possibilities of falsification, and partly because the interest of psychology has not been directed toward the study of the development of a personality from infancy to maturity. Experimental studies have naturally had to be confined to cross sections rather than longitudinal sections. In a few cases of recurrent panic reactions we were able to study cases over a period of ten years; in other cases we have followed the patients and their development after recovery. The most promising attempts will be the study of children and their development, as I have done in the limited field of children's schizophrenia. In that whole group I have never found any panic reactions, although fear and fright are not unusual.

A certain group of patients is characterized by emotional immaturity. In adolescence these cases are known as infantile personalities—*i. e.*, children whose behavior and emotional reactions correspond to that of children a few years their juniors. Many remain on this poorly organized level while others develop faster after puberty and reach a normal level within a short time. The group of immature and unstable personalities is widely represented in fear, panic and fright reactions. Emotional instability seems to be a feature of a contributory rather than of an essential nature.

Heredity studies on a characterological basis with due attention to reaction tendencies will throw further light on the problem of tension depressions. Some of our patients had siblings who suffered from deteriorating schizophrenic and paranoid reactions. It is obvious that constitutional factors play a considerable rôle in the form and content of tension reactions and especially of panics. A patient, for example, whose sister had a paranoic psychosis developed a panic with a paranoic picture. I would not be willing, however, to group this patient's reaction under paranoic reactions. In contrast to the latter reactions, panics have not the slow and insidious development of ideas of reference with increasing systematization. We observe a prolonged period of tension leading to panic and then, based on the general insecurity, acute ideas of reference and delusions of persecution. The development is: tension—explosion (panic)—delusions of persecution.

The nosological position of paranoic reactions is still disputed. Suspiciousness has been considered: "a type of manic-depressive mixture." Paranoic illnesses with suspiciousness as their basic affect were therefore included in the manic-depressive group (Specht). This example shows clearly how urgent it is to reach a better study and clearer formulation of impure affects.

It is also essential that we distinguish between disorganization and non-organization. Many personalities are poorly organized—*e. g.*, certain psychopathic make-ups, oligophrenic, and the large group of what one calls immature personalities. Queer and incongruous features occur easily in these individuals under the influence of affective reactions, depressions or elations. It is difficult to decide at present which of the panic features, especially in agitated depressions and organic psychoses, are due to dis- or to non-organization. Further study on case and experimental material may clear this point.

In many panics we observe a tendency to disorganization, manifested by thinking disorder, projections of various types and even passivity feelings. It is therefore important that we consider the relation of these panics to schizophrenic reactions. Bleuler explains the symptoms of disorganization by dissociation of affects, their inhibition and the influence of latent affects. Such a theory might be applied to insecurity reactions with projection, tension and suspiciousness, but without frank fear. I doubt whether we deal then with the same as a panic reaction and do not feel that it is justified to stretch the panic concept to such an extent.

A person may lose his security intellectually and therefore be unable to decide freely. Whenever such an intellectual insecurity is very marked, some fear emotions accompany it. Afterwards many patients are on their defense and deny any fear or anticipation. The objective symptoms of insecurity and tension are frequently so slight that they cannot be observed. This is well illustrated by the case of a 36-year old man who, during a general business panic, sold his store with considerable loss. His first reaction to the unfortunate deal was relief and pride because he had been able to escape disaster. After a few days he realized that he had acted with poor judgment. He then developed a depression in which he was unwilling to accept treatment and refused to dis-

cuss the sale. It was only after many months, and after the depression had practically disappeared, that he was able to discuss his personality make-up. He described then the initial panic with fear and anticipation of an impending crash of the whole business structure. One can imagine that this man might even have developed insecurity to a degree which would have caused projections and suspiciousness without ever giving us a description of his emotional insecurity, his anticipations and fears. Such cases, however, are no doubt rare. More important is the fact that the intensity of the observed or described fear does not need to be parallel to the symptoms of panic. In some cases slight fear may be accompanied by many and various projections, while other patients in wild panic outbursts may have few or none of these symptoms. Bleuler offers an interesting theory which can be applied to fear and panic: Affects have an upper intensity limit. If the intensity exceeds this limit, the usual subjective and objective symptoms of the affect change. This limit seems to vary considerably, according to the individual and the situation. It is unknown whether affects can reach such a grade of intensity in every individual. Bleuler does not investigate further to determine the constitutional personality factors which predispose to such extreme reactions.

Incongruity in behavior has been seldom found in panic reactions and where found can be explained by the fear affect. I refer especially to sudden outbursts of laughter and hilarity. These symptoms are due to relaxation after maximal tension, and while frequently interpreted as schizophrenic symptoms are essentially different from parathymic or complex-determined incongruity. The loud and boisterous laughter of some of these patients is rarely interpreted as incongruous; even the casual bystander usually recognizes it as the expression of a person who feels ill at ease. When this relaxation is accompanied by dancing, rhyming or some flight of ideas, these manifestations are taken for manic features. This mistake, which occurred because of the lack of thorough analysis, led to the unfortunate concept of mixed manic-depressive psychosis. This term should be used as little as possible. It really indicates that there is a mixture of pure and impure affects, but not a mixture of the two pure affects of elation and depression.

In cases of depression with schizophrenic admixtures, it will always be wise to try to find out how much is personality determined in its narrower sense and how much is impure affect. The impure affective features are naturally also personality determined, but lead only secondarily to a fantastic elaboration; schizophrenic admixtures are primarily fantastic elaboration.

Impure affects have a stronger suggestive influence than pure affects. Fear and panic are well known examples. In the individual panic a prolonged tension with increasing insecurity is essential for a panic which is the climax of fear. In a crowd suggestive influences make this unnecessary. These panics are usually short-lived and subside soon after the individual has escaped the danger and the affected crowd. Therefore, the larger the affected crowd, the longer the panic lasts. This is well seen in war panics of units of various sizes. A whole army in a panic will also affect those who had no direct dealings with the danger.

The individual who is seized in the panic of a crowd will rarely develop all the full-fledged symptoms that we observed in our patients. The exceptions are individuals who have been for some reason under considerable tension for a certain time and where the crowd panic starts an individual panic. Because of their suggestive quality, impure affects may induce psychoses in others (*folie à deux*).

Catatonic raptus may occasionally belong to the group of impulsiveness as expressed in tantrum-like reactions, but is usually more definitely content determined. This is essentially different from a panic (for which in older literature the term raptus melancholicus has been used).

The hyperkinetic reactions of schizophrenics are also essentially different from panic excitement. They are defense, flight or aggression movements, or of a more or less distorted symbolic nature. Impure affects are outstanding in many hyperkinetic phases; then again, little affect seems to accompany many movements. The study of motility disturbances may offer an approach to a better study of the affects involved.

The apparent schizophrenic features of the disorganizing panic can be explained by fear and panic. A stupor, for instance, can be caused through fear of action in the state of extreme insecurity.



In their delusions and hallucinations the patients utilize actual and present situations and less the purely autistic content. The disintegrating and paranoic panics recover. In some of our cases recovery has now lasted fifteen years. There are naturally also cases in which panic is the first manifest phase of a beginning schizophrenic illness. The further possibility exists that fear and anxiety can activate schizophrenic tendencies and produce a full-fledged schizophrenic reaction.

Many panic symptoms are due to relaxation and release of tension and not directly to fear. Tension pushes to and is relieved by action, which may go in the direction of flight or advance. Courage born from fear is well known among soldiers.

Reactions which are due to fright have to be distinguished from panic. Fright is characterized by its suddenness. Fear is part, but not all, of it. It is the reaction to sudden disaster. Marked visual or auditory features increase fright. The person thus affected does not see a way out except through flight. Disaster having been escaped, fright usually passes away quickly. It is often impossible to distinguish to what extent fear, panic or anxiety features accompany fright.

In psychiatry fright plays a minor rôle. We find fright psychoses in war time and in accidents, where they are often called shock psychoses. This term is not very desirable because it includes usually the theory of some organic basis, which is possible but cannot be proved. Shock is also used in various meanings in internal medicine. Confusion therefore would result by applying this term to the group of fright reactions.

Kraepelin's fright neuroses (Schreckneurosen) include, unfortunately, more than the name indicates, because he based his description on observations of individual reactions to accidents of a crowd. As I have mentioned previously, mass suggestion often causes a panic reaction. This group of fright neuroses contains therefore fright reactions as well as crowd panics.

The second group of leading panics occur as a climax in depressions characterized by anxiety and dominate the picture entirely for a certain time. This is but a phase in the whole illness which has been termed anxiety psychosis (Wernicke). Depressions with anxiety and panics are frequently observed around the menopause and



later. These seem to have nothing to do with presenile or beginning arteriosclerotic changes. Most of our cases have led to recovery and no symptoms were noticed which indicated an organic process.

The discussion as to whether depressions at and after the involutional age belong to the manic-depressive group or form a separate type of depression is still very lively. Several types of involutional depressions have been singled out, but unfortunately entirely on a descriptive basis. Their relation to the manic-depressive group does not interest us in this presentation. What we are interested in is the fact that such depressions exist and that their picture can be further complicated by the panic phase. Many authors argue that catatonic features, negativism, absurd hypochondriacal delusions and monotonous reiteration of complaints with little affect, which often persist as a final state, indicate a schizophrenic component. Even Hoch and McCurdy in their dynamic approach to involutional melancholia conclude with the statement that such cases belong to dementia præcox. We have to realize that the various factors have not been sufficiently studied and to warn against considering the above mentioned symptoms definitely schizophrenic or schizophrenic-determined. They may develop in quite a different way, and study of the panic phases is very illuminating. Posturing does not need to be catatonic—unusual types of attacks have been observed in panics which closely resemble catatonic attacks. Monotonous repetition of complaints is frequently noticed, as well as aversion reactions which are sometimes wrongly interpreted as negativism. Distorted hypochondriacal delusions may be based on fear paraesthesias. We have further to realize that a panic may lead to disorganization and it is not proved that this then is the same as schizophrenia.

The occurrence of a panic phase in a depression with anxiety and fear is a serious complication which makes the treatment more difficult and prolongs the illness. Three possible outcomes have been observed in our cases: The larger number of patients recovered after two or three years; a relatively large number ended by suicide, which was committed in sudden and violent or sometimes carefully premeditated form; a third smaller group ended in a rut formation in which the affects became shallow and the content narrowed (it is hardly justifiable to consider these symptoms schizophrenic).

I have stressed the need to do justice to impure affects and their influence on the personality, rather than attempting to explain the symptoms on the ground of mixed affects. The term mixed manic-depressive reaction (if one has the need for such a term) ought to be restricted to Weygandt's original observation, that during a manic or a depressive phase one of the symptoms may change into its opposite for hours or for days, while the other features persist. This is especially noticed at the time of the change of the phases. We have observed this, as well as the very frequent change of short phases several times a day, in affective psychoses in poorly organized personalities.

#### SUMMARY.

Panic reactions—*i. e.*, maximal fear states which result from prolonged tension and insecurity, occur in certain constitutional make-ups as a reaction to specific life situations. Panics develop as a climax of a tension depression, or they may form an important and prolonged phase in depressions with uneasiness and anxiety. This latter group has been described as an anxiety psychosis (Wernicke). I distinguish these two groups of leading panics from mere incidental panics, which may occur in any psychosis or psychoneurosis.

A thorough discussion of the literature shows the development of the concept of panic in psychiatry and reviews especially the attitude to the impure affects of anxiety, fear, panic and fright. Impure affects have to be studied from a genetic-dynamic point of view. This leads to the recognition of their far-reaching influence. Much of what has been diagnosed schizophrenic admixtures can be explained by impure affects.

The term tension depression which is used in this paper does not coin a new disease entity, but describes reactions of an attack type in which tension and its symptoms are the outstanding complaint and in which the depressive affect seems to play a subordinate rôle. Because of their course and their close relation to depressions, tension depressions are considered to belong to the affective reaction type.

From a formal point of view we distinguish between paranoid and disorganizing panics. Their relation to paranoic and schizophrenic reactions is fully discussed.

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## THE AGE INCIDENCE AND DISTRIBUTION OF GENERAL PARESIS IN EASTERN ILLINOIS.

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Although it is an established fact that the condition known as general paralysis of the insane is due to an invasion of the central nervous system by the *treponema pallidum*, it is not yet known why some individuals develop paresis, while others having syphilis show practically no involvement of the central nervous system. It is stated that only about 1 to 5 per cent of patients with syphilis develop paresis.

There are three theories which attempt to explain why all persons having syphilis do not develop paresis:

1. The development of paresis is due to an infection by a specific strain of the spirochæte.

2. The second theory is that general paresis occurs only in those who by reason of a defective cortical development would have become demented in any case, and that the process of dementia is only hastened by the occurrence of the syphilitic infection.

3. The third theory is that of individual susceptibility.

Each of the above theories has its adherents and none has been conclusively proved or disproved. We believe that the first theory, that of a specific neurotrophic strain infection is probably the correct explanation for the occurrence of general paresis in a limited number of persons having syphilis. However, as we shall show, there are probably other factors which must also be considered.

In support of the neurogenic type of infection, Marie and Levaditi<sup>1</sup> say that the organism found in general paresis is different from that found in the external lesions of syphilis. This observation is especially noteworthy when it is pointed out that in those cases where the cutaneous lesions are marked, paresis is less likely to occur.<sup>2</sup> Moreover there appear to be certain clinical differences in the cutaneous lesions of syphilis as compared with cases which develop paresis. Then there is the additional proof that microscopically there is a difference in the organisms found in the brains

of paresis and the organisms found in the external syphilides. Further Kraepelin<sup>3</sup> stated that some workers attached importance to the observation that all the individuals who became infected at the same source developed paresis. This observation is not common. He also quoted Plaut and Mulzer who showed that certain races or strains of treponemata have a greater disposition to cause a rise in the spinal fluid cell count of the rabbit than do other strains. It is known<sup>4</sup> that the rise in the spinal fluid cell count is the first change to be noted in early central nervous system involvement.

From the above it is seen that there is strong evidence in favor of a neurogenic strain of the spirochæte, *i. e.*, a strain which attacks the central nervous system more readily than do other strains.

The second theory is that advanced by Bolton,<sup>5</sup> who gives the reasons for his beliefs in his book.

In support of the third theory, namely that of individual susceptibility, Malamud and Lowenberg<sup>6</sup> suggest that in the pathogenesis of general paresis, the cortical capillaries serve as a bridge across which the process crosses into the parenchyma, and that a possible mechanism underlying this relationship is to be found in the blood-cerebrospinal fluid barrier which may present some original defect. That the factors concerned with individual susceptibility are endogenous was indicated by Hinsie<sup>7</sup> who says that in only a very few cases of general paresis could it be shown that exogenous factors had any influence on the onset of symptoms. Osnato<sup>8</sup> believes that in certain cases of head trauma there results a change in the blood vessels which enables the syphilitic organisms and their toxins to enter the brain. The toxins of infections seem to be able to bring about a similar ease of entrance. Jones<sup>9</sup> states that "mental stress, business worries, anxieties and failure are frequently exciting factors in the case of men who have suffered a luetic infection 10 to 12 years previously."

The conclusions in this paper are drawn from an analytical study of the records of all paretics admitted to the Kankakee State Hospital during the years 1910-1932 inclusive. During this period 1231 male and 224 female paretics were admitted. The ratio for male to female is as 5.5 to 1. Other ratios have been reported from 2 to 1 and up to 17 to 1.<sup>8</sup> Prior to 1915 there were no routine blood and spinal fluid examinations, the classification of general paresis being based on the mental and neurologic findings. Since 1915 the blood and spinal fluid serology was determined in every



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case of suspected paresis, and the classification was largely based upon the laboratory findings with due consideration of the mental and neurologic data.

All of the admissions in this study have been classified as to the year of admission, and as to the age on admission; and in the female cases the number of living children borne was determined whenever possible.

The accompanying map of the State of Illinois shows the location of the various counties which admit patients to this hospital. Certain counties represented by a very small number of paretics were omitted from the study. The following table shows the county, its largest city and the present approximate population:

Name of county.	Principal city.	Population of city.
Cook .....	Chicago .....	3,500,000
Vermilion .....	Danville .....	50,000
Will .....	Joliet .....	40,000
Champaign .....	Urbana-Champaign .....	40,000
LaSalle .....	Ottawa-Peru-LaSalle .....	50,000
Coles .....	Charleston .....	6,000
Iroquois .....	Watseka .....	3,000
Kankakee .....	Kankakee .....	20,000
Cumberland .....	Toledo .....	5,000
Livingston .....	Pontiac .....	6,000

#### OTHER COUNTIES ADMITTING PATIENTS.

DeWitt .....	Clinton .....	5,000
Ford .....	Sibley .....	1,000
Kane .....	Aurora (few patients here) .....	40,000
Wabash .....	Mt. Carmel .....	7,000
Douglass .....	Arcola .....	3,000
Piatt .....	Bemet .....	5,000
Jasper .....	Newton .....	3,000
Crawford .....	Robinson .....	3,000
Marshall .....	Marshall .....	2,000
Edgar .....	Paris .....	8,000
Macon .....	Decatur .....	55,000
McLean .....	Bloomington .....	30,000
Effingham .....	Effingham .....	5,000
Richland .....	Olney .....	6,000
Grundy .....	Coal City .....	4,000

The first 10 counties in this list are considered in this report. The following 15 counties are merely included to show that they

differ little from the counties included, other than Cook County, as to population. Patients have not been admitted to this hospital from counties not on this list.

The number of male paretics admitted, the year of admission and the county of origin is shown in the following table:

Year of admission.	Cook.	Vermilion.	Will.	Champaign.	LaSalle.	Coles.	Iroquois.	Kankakee.	Cumberland.	Livingston.
1910.....	2	0	0	0	0	0	0	0	0	0
1911.....	1	0	0	0	0	0	0	0	0	0
1912.....	4	0	0	0	0	0	0	0	0	0
1913.....	12	0	1	0	0	0	0	2	0	0
1914.....	13	0	1	0	0	1	0	0	0	0
1915.....	16	2	1	2	0	0	1	0	0	0
1916.....	24	3	0	1	3	1	0	0	0	0
1917.....	24	8	1	4	3	0	2	0	0	1
1918.....	50	7	0	1	2	1	1	0	0	2
1919.....	39	6	6	2	5	1	0	2	0	0
1920.....	66	4	4	1	0	1	0	4	0	0
1921.....	54	9	1	3	3	3	2	3	1	1
1922.....	61	2	4	2	2	2	3	1	0	1
1923.....	69	9	5	2	2	0	0	1	0	0
1924.....	73	5	0	0	2	1	0	1	0	0
1925.....	85	6	5	2	2	0	2	1	0	0
1926.....	62	4	3	3	0	2	0	1	0	1
1927.....	93	5	5	2	2	0	1	2	0	0
1928.....	59	2	3	5	1	1	1	3	1	0
1929.....	46	4	3	2	1	0	0	3	1	0
1930.....	44	8	0	3	0	0	2	1	1	0
1931.....	21	8	1	4	0	0	2	3	1	0
1932.....	25	5	5	2	2	0	1	0	0	0

As is shown, the number of male paretics admitted annually from Cook County has gradually increased from 2 in 1910 to 85 in 1925. In 1926 there occurred a drop in the number of male paretics admitted from this county, while in 1927 the number increased to 93. Since 1927 this number has again gradually decreased until in 1932 only 25 were admitted.

There is no definite way of accounting for this drop in the number of male paretics admitted from Cook County. There are various things which must be considered, the first of which is that the greatest number of admissions occurred about 10 years after the entrance of the United States in the world war. It is true that

the greater number of admissions were laborers, who as a group tended to migrate to the city where work was plentiful during the years 1923-1927. This increase in the number of workers may account for the number of admissions. Another consideration is that it was about 1927 that the treatment of general paresis on a large scale was started; and it is possible that other state hospitals (Elgin and Chicago State), as well as private sanatoria, received the paretics which previously had been sent to this hospital. However, if other hospitals or sanatoria played such a part, then there should be a corresponding decrease in the number of admissions from the other counties. This was not the case; the admissions have remained fairly constant. Hence the only thing which can be stated with certainty is that 563, or 60.2 per cent, of all male paretics admitted from Cook County were admitted from 1920-1927 inclusive.

When the other counties are considered separately, it is at once seen that admissions for certain periods of years often account for over one-half of the total male paretic admissions from that certain county. Thus of the 97 male paretics received from Vermilion County 50 or 51 per cent, occurred in the 1917-1924 period inclusive. From 1930-1932, 21 more admissions occurred. In other words, a period of eight years, and another period of three years, accounted for 72 per cent of the male paretic admissions from Vermilion County.

Figured on the basis of the 49 male paretics admitted from Will County, 20, or 40.8 per cent, occurred between 1919-1923 inclusive. Of the 41 male paretics from Champaign County, 21, or 50 per cent, were admitted in the period from 1926-1932. For LaSalle County from which 30 patients with paresis were sent, 13, or 43.3 per cent, were admitted from 1916-1919 inclusive. From Coles County there were a total of 14 admissions, of which 8, or 57.1 per cent, occurred in 1918-1922.

Iroquois County is represented by 18 male paretic admissions, 7, or 38.8 per cent, of whom came from 1927-1932 inclusive. For Kankakee County with a total of 28 male paretics admitted from 1910-1932, 12, or 42.8 per cent, were received in 1927-1931 inclusive. Four of the Cumberland County five male paretics were admitted from 1928-1932 inclusive, and three of the six male paretics from Livingston County came here from 1917-1918 inclusive.

Thus from our tables it is evident that for certain counties there were a greater number of admissions in certain periods than in other periods, and that in some instances 50 per cent or more of the total admissions occurred in as short a period of time as two to five years.

As some of the population of each community, such as migrating workers, are without a permanent residence, it seems reasonable to suggest that this element may explain the occasional male parietic admission outside of the peak years for any one county. An attempt was made to determine the actual length of residence in the committing county, but because of incomplete records, this could not be determined with any degree of exactness. Of course length of residence in any locality does not in any way suggest that the infection was acquired in that particular locality.

A similar table showing the female parietic admissions follows:

Year of admission.	Cook.	Vermilion.	Will.	Champaign.	LaSalle.	Coles.	Iroquois.	Kankakee.	Cumberland.	Livingston.
1910.....	0	0	0	0	0	0	0	0	0	0
1911.....	0	0	0	0	0	0	0	0	0	0
1912.....	0	0	0	0	0	0	0	0	0	0
1913.....	0	0	0	0	1	0	0	0	0	0
1914.....	3	0	0	0	0	0	0	0	0	0
1915.....	4	0	0	0	1	0	0	0	0	0
1916.....	7	0	0	0	2	0	0	0	0	0
1917.....	5	1	1	1	0	1	0	0	0	0
1918.....	3	0	1	0	0	0	0	0	1	0
1919.....	8	0	0	0	0	1	0	1	1	0
1920.....	7	0	3	0	1	0	0	0	0	0
1921.....	2	0	0	0	0	2	0	1	0	0
1922.....	12	1	1	1	1	0	0	0	0	0
1923.....	9	1	1	0	0	0	0	0	0	0
1924.....	17	0	0	0	0	0	0	0	0	0
1925.....	21	1	0	0	0	0	0	0	0	0
1926.....	13	2	0	1	0	0	0	1	0	0
1927.....	10	3	0	0	0	0	0	0	0	0
1928.....	10	1	0	1	1	0	0	1	0	0
1929.....	6	2	1	0	0	0	0	0	0	0
1930.....	7	0	1	0	0	0	0	1	0	0
1931.....	8	2	1	1	0	0	0	1	0	0
1932.....	18	1	1	3	1	0	0	0	0	0

The above table shows that all counties, other than Cook, taken collectively, show about the same number of admissions year by year. On the other hand, Cook County shows a peak of admissions in the 1924-1928 year level, during which time 71, or 41.7 per cent, of the 170 female paretics were admitted. When this period is compared with that noted in the case of the male paretic admissions from the same county, there is an agreement. The agreement will be more close when one considers the effect that child-bearing has on increasing the latent period of paresis in women.

We have considered the possibility that both the husband and wife were afflicted with paresis. However cases where both members of the family are admitted are uncommon, and as far as can be determined this occurred in only six instances. Hence the agreement in the peak years cannot be accounted for by the fact that both members of the family were committed.

The other counties show comparable findings, as was the case with the male paretic admissions. From 1925-1929, 9, or 60 per cent, of the total 15 female paretics were admitted from Vermilion County. There is no exact corresponding male period, except that the peak years for the female paretic admissions occurred between the two peak year periods for the male paretic admissions.

From Will County 11 female paretics were admitted, and 7, or 63 per cent, were admitted in the period 1917-1923 inclusive. This period corresponds to a similar period in the case of the male paretic admissions.

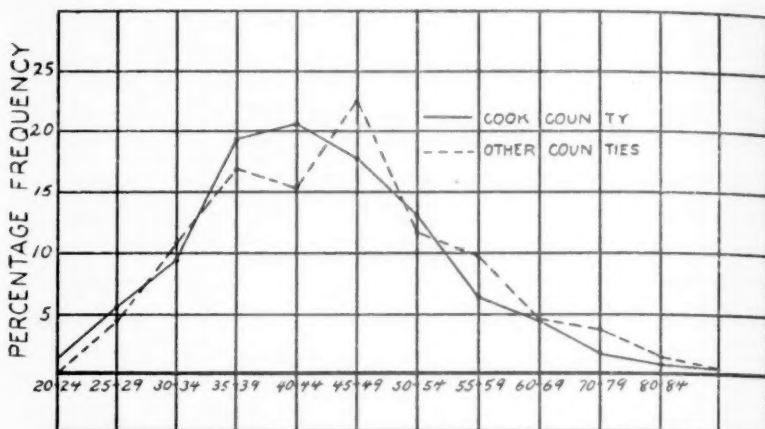
Champaign County admitted a total of 8 female paretic patients, and 4, or 50 per cent, were admitted from 1931-1932 inclusive. This period, although shorter, agrees with the male paretic period. In the case of LaSalle County 4, or 50 per cent, of the 8 patients were admitted during 1913-1916. This period corresponds with the male paretic admissions from the same county which took place in 1916-1919.

Coles County admitted four or all of its female paretics in the 1917-1921 period, and likewise the greater number of male paretics were admitted in the same period. Six female paretics were admitted from Kankakee County, and of this number 4, or 66.6 per cent, came in from 1926-1931. In this case also there is an agreement with the peak years of the male paretics admitted from this county. Two female paretics were admitted from Cumberland





By plotting the percentage frequency of the ages on admission, one for Cook County, and one for the total of the other counties, the following graph is obtained:



The graph indicates that the average age for the male paretics admitted from Cook County is about five years less than the average age of those from all the other counties. The only explanation that we have for this difference is that the stresses and strains outside of Cook County are less marked.

In a study of the paretics admitted to the St. Peter State Hospital, Minnesota, Peterson<sup>10</sup> noted that the greater number of admissions were in the 45-54 age period. The environment presented in that section of the country is somewhat similar to that in the counties outside of Cook County, and it is much simpler than the environment in Cook County itself.

The average ages for the male paretics from each county was calculated with the following results:

Cook .....	42.2 ± 1.0	Kankakee .....	43.2 ± 3.4
Will .....	46.7 ± 5.1	Livingston .....	47.6 ± 4.1
Coles .....	48.3 ± 4.4	LaSalle .....	44.0 ± 3.2
Iroquois .....	45.4 ± 3.9	Vermilion .....	47.5 ± 4.7
Cumberland .....	43.0 ± 1.2	Champaign .....	48.1 ± 2.0

The observation that the number of paretics admitted to certain hospitals varies at different times is not a new one. Power<sup>11</sup> found, as we did in Cook County, that at the Brentwood (England)

Mental Hospital there were 1185 male paretics admitted from 1907-1911, and only 919 from 1924-1928. The same reduction was noted in the female parietic admissions. He also noted that in the 1907-1915 period only 14 per cent were over 50 years old while in the 1920-1928 year period 28 per cent were over 50 years old. Jones<sup>9</sup> showed that the admissions of male paretics to mental hospitals in Australia steadily increased from 1905 up to 1914, and that following 1914 there was a steady decrease. He predicted an increase in the number of paretics following the return of soldiers from the war. He also quoted Sir John MacPherson who stated that between 1888-1889 in Morningside, England, there was an enormous number of cases of general paresis, while in the same years there were few cases from the banks of the Clyde. In the Glasgow asylums, which are in the Clyde region, there were few cases of general paresis although syphilis was not less common there than in Edinburgh. Later over 50 per cent of the deaths in Glasgow asylums were due to general paresis. This illustrates our finding of peak years from certain localities. Pilcz<sup>12</sup> noted a well marked drop in the number of cases of paresis in Vienna for 15 years, but this drop was most marked in 1920-1921. He was unable to account for this decrease, especially in 1920-1921.

From our own observations and the views of others, it can be stated that there does occur a drop in the number of admissions and that there are peak years for certain localities during which more parietic admissions occur. It is possible that this is a local finding. However Kanner<sup>13</sup> believes that general paralysis of the insane is not absolutely associated with syphilis during all the time this venereal affection stays with a nation, and he states that it has the character of an episode in the course of syphilis. He believes that general paresis stays with a people about two hundred years during which time it gradually increases at first, and then gradually drops off. The case of the North American Indian is cited as an example, and paresis in this race is rare at present.

In order to determine if pregnancy, or more accurately, child-bearing, had any influence upon the course of paresis, the records of all female paretics were examined to determine how many living children each had given birth to. It was realized that information pertaining to the total number of miscarriages would be unreliable, and for this reason the number of living children only was con-

sidered. In the case of the female paretics the age incidence was not determined, but the average age for the admissions classified as to whether they had been admitted from Cook County or not, and the number of children living were considered. The results are as follows:

	Cook County.	Other counties.
1. No record of living children.....	38.0 $\pm$ 2.5	37.4 $\pm$ 3.0
2. One living child.....	39.6 $\pm$ 2.7	42.1 $\pm$ 4.7
3. Two living children.....	43.9 $\pm$ 4.4	44.2 $\pm$ 4.7
4. Three living children.....	39.7 $\pm$ 4.2	36.7 $\pm$ 2.6
5. Four living children.....	43.2 $\pm$ 1.1	no admissions
6. More than four living children.....	48.1 $\pm$ 1.3	48.6 $\pm$ 5.0

The average ages indicate the same as the graph of the frequency percentage age distribution in the male paretics, and though the difference is not as marked, the average age of the female paretics, excluding those who have no living children, from counties other than Cook is a little greater than the average age for the female paretics admitted from Cook County. We have no explanation to offer as to why the average age of those female paretics who had three children should be less than those who had two, or four or more living children. The number of patients in each group is about the same, so that this decrease in the average age is not due to a smaller number in this group. The table does indicate that child-bearing has some influence in delaying the onset of symptoms in paresis. This observation agrees with that made by Moore.<sup>14</sup>

From an analysis of the figures here presented, it is evident, first of all, that there are variations in the number of paretics admitted from certain counties, and that these variations for both male and female paretic admissions correspond closely with each other. Thus one county may admit over 50 per cent of the paretics received from that county in the space of a few years. When the admission peak years are considered in the adjacent counties, there is no close correlation. Thus the peak years of admissions are limited to certain small localities, and not to entire sections of a country. It is realized that the original luetic infection antedated the admission by 10 to 20 years, and it seems reasonable to suppose that at least the greater number admitted during the peak years received their initial infection at approximately the same time. That all were not admitted the same year—that is the year of admission

here—is due to individual resistance. We believe then that infection at certain times in certain localities greatly predisposes to the development of paresis. It has been pointed out that the usual clinical course of those cases of syphilis which finally develop paresis differs from the cases which do not develop paresis by the absence of marked cutaneous manifestations.

From the foregoing facts we believe that there occurred in the small localities referred to a syphilitic infection that was different from the usual infection. In other words, just as other infections assume different courses due to known differences in the type of organism, it appears that the type of *treponema pallidum* was different from the usual type not leading to paresis.

One may speculate as to what caused the actual breakdown. It is known that in the asymptomatic neurosyphilis there occur memory and retention changes, but such an individual may lead what is an apparently normal life, and never show any psychotic symptoms. On the other hand certain cases of paresis show a marked psychosis with little or no memory and retention defects. If the conditions about a demented individual (a paretic shows an organic dementia) are simple it is possible that he may never reach an institution, or that he reach it at an advanced age. We know that the average age of the patients admitted outside of Cook County is greater than the average age of those from Cook County. It is not reasonable to believe that the paretics in Cook County acquired their initial infection at an earlier age. Hence there must be some factor present which permits patients to maintain an apparently normal life for a longer period. Environment with its varying stress must play a part in this. Pregnancy plays some rôle in delaying the onset of paresis, since we find that in general the more children borne, the older is the paretic when admitted.

#### CONCLUSIONS.

1. From a study of the male and female admissions to the Kankakee State Hospital from 1910-1932 inclusive, we believe that the correct explanation for the variations in the number of admissions from small localities is that there occurred an initial infection resulting from a strain of spirochæte different from the usual strain. This is apparently a neurotrophic strain.

2. The environment itself plays a part in the actual breakdown, but is not the cause of the breakdown—it merely hastens or retards it.

3. Pregnancy or child-bearing plays some part in delaying the onset of mental symptoms in paresis.

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## THE DELUSIONS OF SPIRITISM.

### PSYCHIATRIC REACTIONS.\*

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Spiritism is a term used to designate the belief that supernatural forces manifest physical phenomena inexplicable by and sometimes in contravention of the known laws of nature. It also denotes a belief in the continuation of life after death and the possibility of communication between the dead and the living through a medium or psychic or otherwise. The word, spiritualism, is properly used in respect of certain religious aspects of spiritism only.

The following review of spiritism and kindred cults is considered *a propos* since the case to be specifically considered in this paper manifests delusions growing out of a mixture of beliefs in all these cults. The father of the patient is an exponent of the religious philosophy of the theosophist, while his daughter, the patient, is a believer in a combination of theosophy and spiritism.

Though its modern revival dates from the year 1848 with the curious knockings of the Fox family, spiritism is a survival of nature worship, the orgiastic worship of mother deities, witchcraft, demoniac possession and animal magnetism. Many of the notorious eruptions of belief in demoniacal possession, such as that of the tremblers of Cevennes and of the convulsionists of Saint Medard, displayed characteristics quite analogous to those of modern spiritists such as the trance and ecstatic emotionalism, the delivery of long-winded, often incoherent discourses, etc.

It was the Poltergeist, or noisy ghost, that showed the greatest affinity to modern spiritism. In German folklore the phrase means a rattling or knocking ghost. The cult dates from 856 B. C. and similar outbreaks of supernatural rappings, inexplicable noises

\* Read before the Philadelphia Psychiatric Society, February 10, 1933.  
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and disturbances are also known among savage as well as among civilized peoples. These demonstrations have usually shown the most pronounced results through the person of a medium, more frequently than otherwise through the mediumism of a child or woman of epileptic or hysterical disposition. In earlier times these persons were known as witches, but they were certainly the direct forerunners of the spiritist medium.

One of the more modern manifestations of this type of occultism is the case reported and known as that of *The Drummer of Tedworth*. In 1661 a vagrant drummer was taken before a justice of the peace. His drum was taken away from him and deposited in the house of a Mr. Monpesson while he was absent from home. Immediately loud knockings and thumpings were heard and the beating of an invisible drum. Articles flew recklessly about the rooms and the bedsteads were shaken. The disturbances ceased when the drummer was transported. It was, however, finally decided that the "two modest little girls in bed" had had a great deal to do with the noises and thumpings.

There are on record numerous other cases of similar sporadic happenings. There was the Cock Lane ghost of 1771 and the Joller family case of 1860, as well as numerous other marked demonstrations of supposed supernatural interest in mundane affairs of more recent date.

Modern spiritism in America originated with the Fox family in 1848. J. D. Fox, his wife and their two daughters were disturbed by a mysterious knocking. Kate Fox discovered that the sounds were intelligible and communication with the ghostly knocker was allegedly established by a code of raps. The spirit professed to be a murdered pedlar. Since it is thought that living mediums are required to communicate with spirits Kate and her sister, Margaret, became the first mediums. Interest in spiritism was greatly intensified at that time by the prevailing vogues of mesmerism and hypnotism. The meetings became popular and gradually assumed a religious color, for the purported communications with lost relatives were accepted as proof of life after death, and the movement spread like an epidemic, both in this country and in Europe.

Spirit circles were formed in many families. Those who had sat with the Foxes became mediums and developed this talent in

others; but it developed in others only after patient waiting. The cult was introduced in England in 1853 and 1855 upon the visits of Mrs. Hayden and Daniel Home, two mediums of importance from America. The *Yorkshire Spiritual Telegraph* was published as the first English journal of spiritism. During the period just mentioned Andrew Jackson Davis wrote a book upon the divine revelations in nature, maintaining that information from other worlds and other people could be obtained from persons in a sleep or waking trance.

Spiritism shows, more or less indefinitely, interlocking connections with other cults, particularly with theosophy. Theosophy, however, differs from spiritism in being a religious-philosophical system, claiming absolute knowledge of the existence and nature of the Deity. It maintains that this knowledge is obtained by special revelation to persons possessing transcendental intelligence. Theosophy is, for all practical purposes, another name for speculative mysticism. It purposes to establish a Universal Brotherhood of Humanity based on the oriental idea of One Life.

The doctrines of theosophy were rather sharply laid down. Certain Mahatmas or adepts in mysticism and occultism were possessed of the secret dogmas. Through certain mediums these secrets have been and are being communicated, as in the case of Madame Blavatsky. Madame Blavatsky, however, showed evidences of self-hallucination and was also detected in deceit, though she was supposed to be a person of good character otherwise.

According to Lewis Spence<sup>1</sup> the revelations of theosophy are, in reality, no more than a mélange of Buddhistic, Brahminic and Cabalistic matter. Its tenets maintain that the soul of man is immortal and that the soul's growth and splendor have no limit. The principle is that life dwells within us and without us and that its manifold insinuations may be perceived by any one who has adequately enlarged his spiritual receptivity. Each man is his own lawgiver, the dispenser of glory or gloom, his own reward or punishment.

Theosophy posits the existence of the Absolute, but does not assume knowledge of Its attributes. There are many worlds and each is an expression of the Word of God which permeates them all and fills the universe above and about them. Below this God, or solar deity, are seven Planetary spirits, whose relation to Him

is like the nerve centers of the brain to the brain itself. Those who are spiritually capable of becoming adepts and who, in goodness, power and wisdom, rise above the nature of common mortals may advance in inspired evolution to the stature of minor deities.

These deities function on various planes, usually seven in number, of which the Astral is the first and the Absolute is the goal. The method or process of obtaining this spiritual growth is known as Karma. This spiritual development may require many physical existences in this or in other worlds before higher planes are reached. In other words, man is in an evolutionary spiritual process, an essence of the divine spark in the Monadic world.

We may divide spiritism into two classes. The one, which deals with physical phenomena, if it cannot be explained by trickery, illusions or delusions, exhibits a force, hitherto unknown to science, acting in the material world. These phenomena are raps, the ringing of bells, moving of furniture, materialization, *i. e.*, the appearance of what seem to be hands and faces or even entire bodies of deceased persons, spirit photography, unfastening of cords, the passage of bodies through solids, etc.

A second class of phenomena is called automatic. These consist of table turning, automatic writing, convulsive movements, involuntary dancing, trances, the personation of deceased persons by the medium, the hearing of phantom voices, etc. The automatic are by far the more common phenomena. Early investigation by Carpenter <sup>2</sup> on unconscious cerebration and of Faraday <sup>3</sup> on unconscious muscular action showed that it was unnecessary to look beyond the medium's own personality for the explanation even of table tilting and trance speaking, provided the matter communicated was not beyond the range of the medium's own knowledge or powers.

Spiritualists, however, maintain that the information received through the medium is communicated by an extra-corporeal intelligence, and there are some respectable observers who believe that there is some evidence of communication with deceased persons. Among the suggested natural explanations of spiritism, hallucinations and illusions deserve careful consideration and it should also be remembered that spiritualists, themselves, concede that mediums resort to a great deal of trickery and that the moral character of the medium is no guaranty against such devices, and a common

sensory hallucination experienced by several persons, except in a seance room, is a rare phenomenon. Extraordinary deceptions are known to have been practiced by hysterical patients with no apparent motive therefor. Muscular and anatomical dexterity are often employed. It is believed that the ability of the Fox girls to dislocate their toes at will accounted for the so-called raps of their ghost.

Jugglery and conjuring lend themselves easily to the medium's purposes. Almost every prominent medium has been detected in fraud, and experiments which have been conducted under continuous observation have never consistently succeeded. Sir Oliver Lodge and others were convinced that Palladino performed supernatural physical acts, but it is known that she practiced deception frequently.

The case reported here is that of a woman, 33 years of age, who has paranoid delusions and hallucinations based upon spiritualistic ideas acquired through her experiences in spiritualism and from the teachings of her father. The family history is as follows:

The patient's mother was born in Germany. The grandmother died when the patient's mother was but a few weeks old and the child was sent to New York, where an aunt adopted and reared her. She was a sickly child, suffering from rickets and curvature of the spine, but this condition gradually improved and her subsequent health has been good. She received a high school education and at 16 years she was given a year's vacation in Germany for her health and education. She returned to America and worked as a child's governess and teacher for three years and then held a position as an office nurse. She married at the age of 21 and has had four pregnancies, the oldest child being the patient, Millie. With the exception of the patient and the youngest child, who has always been underweight, all the children have grown up to be normal, healthy adults.

The patient's father was born in Missouri, 73 years ago. His people were substantial farmers of American stock. His mother died when he was born, or a few weeks afterwards, and his father married a short time later. His step-mother had two healthy children from this union. His boyhood was not very happy, as he had a great deal of "girl's work to do." He had a common school education, following which he taught penmanship in a public school

for about 10 years. Then he went to a state college for a period of one year, following which he matriculated in Jefferson Medical College, where his step-brother was also enrolled, and with whom he roomed. He had a good scholastic record for the first three years. His senior year was interrupted by his step-brother, who had become an addict to drugs, and who was found one morning in the river, either murdered or a suicide by drowning. About this time his father died, leaving him nothing in his will. Either because of inadequate funds or because of the disgrace attached to the strange circumstances of his step-brother's death, or both, he left school and began work as a waiter in a restaurant, which work he continued for a number of years.

He was a man of quiet disposition, but not very sociable. He read a great deal, went to church and attended lectures. He neither smoked nor drank and apparently had no bad habits. He married when he was 33 years of age and soon afterwards quit restaurant work to become a night watchman, where he received a little better pay. From this time on he held many jobs, usually without much success and without much display of energy. His wife says that he has never had any ambition and that he wasted most of his opportunities to make good contacts and to get ahead. He was always a poor provider and his wife has often been hard pressed to clothe and feed the children. He gave her none of his earnings, but demanded that he be allowed to buy all of the food and clothing, even for his wife, telling her that she had all she could do if she cared for the children. He was very sensitive and often cried over the fact that he had lost a job or had encountered circumstances which hurt his pride.

In his early married life he was very affable and frequently went with his wife to lectures and to church. Occasionally, after they had been married two years, he began to go to spiritualistic and other occult meetings and became distinctly interested in such subjects. As his interest increased he gradually became less communicative and would go off by himself to "meditate." He became a convert to occultism and later was a regular attendant at the meetings. About this time his brother invited him to come and live on his farm in Iowa because he was having trouble in providing his family with the ordinary necessities of life. He readily consented and sent his wife and three children there with the



understanding that he would follow later. Yet, after his family had become settled, he refused to follow and his wife, who was pregnant, was obliged to return to him.

As time went on he became more and more seclusive, spending a great deal of his spare time alone, sitting with folded hands and rarely speaking when spoken to. His interest in spiritism developed somewhat as follows:

At the age of 30, being in poor health, he studied spiritism in the belief that it would restore him to normal vigor. He finally adopted the faith that the ability to receive impressions and to communicate with the spirit world is born in every one, whether he ever developed these powers or not. Indeed he believed that such powers are not usually developed until one is of mature mind; but in Millie's case, he says, it was different. He says that she was *born* to be guided through life and to have unusual powers of communication. He began thinking about harmony with truth and God and he conceived God as knowledge and harmony, which he is eternally creating. He felt that God was not a person or a personal image, but a spirit, in whose likeness man was created. He says that man, through knowledge, can be linked with the All Powerful. There is no death. No life can be destroyed. Heaven is a condition of the mind and is not a locality. In eternity we live continually in spirit and have our own work to do—to grow. The ultimate end is the highest plane where God exists and where all is purity and perfection. This is existence on the same plane with God and having a complete knowledge of God. Christ was no more God than the rest of us, but was the greatest medium whom the world has ever produced. A soul which does not progress might be put out of existence.

He has never seen whole spirits nor heard their voices, except, possibly, the voice of his mother on one or two occasions.

His "impressions" have come mainly from his mother, who lives on a very high spiritual plane and sends guides to help him through life. His impressions are received through a sense of pressure on the top of his head. He considers that his wife is in spiritual darkness and he leaves her in the hands of God. He thinks that all souls will have an opportunity to gain complete knowledge in eternity, wherein may be found the final plane.

He has seen the color of the hair and the eyes of an occasional spirit, but has never spoken to one. Communication with spirits lasts but a few seconds and his mother only communicates with him under exceptional circumstances. At these times a chill passes over him due to the fact that she comes from such a rarefied atmosphere. He is made aware of her coming because of a peculiar clicking sound. His spiritual guides are White Feather, who is more than 100 years old, and Black Hawk and Reuben, all Indians.

He believes that there are seven planes of the spirit world which are: (1) The material; (2) the astral; (3, 4, 5, 6) high planes; and (7) the plane of all knowledge, love and harmony.

The patient's birth history and early childhood were uneventful. Her general physical health has always been good. She is unmarried. She was taught by her mother until she was 10 years of age and then went to the public school, which she attended for four years, making a very good record. Then, being 14 years of age, she had to go to work. Her first job was that of errand girl in an uptown store. She kept this job for several months, but was persuaded to quit by her mother, who thought that the work was too strenuous for her age. She then worked in a shirt factory for about one year, but lost her position when there was a general strike of the employees. After this she obtained a job repairing movie films and stayed in that position for four years, after which she was promoted to the position of floor lady. She had attended night school to learn stenography and when she left her movie film work she took an office position as a stenographer. She worked in this capacity until the firm failed, one year later, and then returned to her movie film job, where she remained until the past summer, when the acute outbreak of her symptoms occurred.

Her childhood is very interesting. It was prophesied by her father when she was born that she would be an exceptional child and would have powers above the average. The mother paid no attention to this prediction, but it was strongly believed by the father. As a child of five or six both mother and father noticed that she was peculiar. She did not care to play with other children, but stayed by herself. She had many childish fantasies and her mother recalls that she talked to imaginary persons, describing them clearly. The child continued fantasizing despite all attempts to correct her. At the age of five or six she described a man in the

house with a bucket of paint and claimed that he was actually in the room. The father remembers that, at this same period, she tried to prevent imaginary animals from stealing her candy. Imaginary conversations and fantasies continued more or less constantly for a number of years, until the age of 15 or 16, when she began to talk about seeing spirits. The mother says that, at this time, the patient's father began to discuss the subject of spiritism with the child. Though there had been many discussions on the subject in the child's presence in previous years she had not been given books to read on the subject; but it was apparent that the father associated the imaginary incidents of the child's life with his own ideas on spiritism.

As time went on the patient talked more and more with her father about spiritism and about five years ago she began to attend spiritualistic meetings. She also read a few books on the subject of spiritism and occultism. She became friendly with a person who claimed to be a psychic and who made her a member of the Rosicrucian Society. She subscribed to the magazine, *Occult Science*. Her adjustments to her work and surroundings were good nevertheless until May, 1932, when the following incident occurred:

While at work she suddenly and without warning became stiff all over and fell to the floor. She was not unconscious, but was very nervous and excited. The doctor who saw her sent her home. She later explained the attack by declaring that all that day a spirit, Robert Smith, aged 45, had been sending her loving messages and had tried to induce her to come over to the spirit side of life. She gave him an impression from her mind (which in the spirit world can be heard just as clearly as the voice in the material world) that she wanted to stay with her mother and father and "not go galavanting off with him." He was very much displeased and, as she expressed it, "tried to yank her soul out through her head," a thing that spirits are supposed to be able to do. To her such an action meant stealing, which is strictly unethical, spiritually.

She said that Robert Smith's spirit had been conversing with her for about one year, but that she had known him before that in the body. In physical life he had tried "to get fresh with her," whereupon she had refused to have anything more to do with him, until he appeared to her in the form of a spirit. His spirit came

to her one night in her room and said, "Millie, I've passed over." He told her that he had been killed in an accident, but so far as his actual death is concerned she has no positive proof thereof. She assumes that what the spirit told her is the truth, since she had not seen him for two years.

A few weeks after his supposed death Robert began to converse with Millie. He first made his presence known by gently tapping her on the top of the head, which is nearest to the seat of the soul, situated in the pineal gland. All the time that Robert has been conversing with her he has been making love to her and trying to have sexual relations with her. He has even tried to persuade her to marry him. This she has refused to do and has prevented a too free communication with him by closing her mind. His conversation is, in her own words, "just a line of hooey." She believes that spirits can have sexual intercourse with humans if they can get into the same vibrations with them. If she can prevent the vibrations from connecting, then sexual intercourse is impossible. She has not definitely had sexual intercourse with Robert, but there have been pleasurable sensations when he has touched her body. She has never permitted more than this and tries hard to prevent even that much liberty. Her attack of nervousness while at work was a reaction to the effort she put forth to prevent Robert from stealing her soul for sexual purposes. Since this attack and up to the present time her principal concern has been the prevention of repeated assaults.

At times Robert tries to attain his purpose by hypnotizing her, especially while she is asleep. She is, therefore, compelled to awaken every night about 12 o'clock to fight off his attempts to hypnotize her and steal her soul. His spirit usually hypnotically suggests that she is dying or is going to die. A few nights ago she awoke to find that he had her soul almost out of her body, but she recaptured it by very strong counter thoughts.

She declares that the soul can be seen by a psychic and that it has the appearance of a delicate vapor, a spiritual substance or ectoplasm, a theory which coincides with the average spiritist's belief. Being a psychic herself she is definitely able to see the soul, wherefore she knew that she had seen her soul almost out of her body. When Robert tries to steal her soul she gets cold and clammy and is often nauseated by his filthy thoughts and

talk. She sees all of this thoughts and declares that they have the appearance of filth—like mud, strung upon a string—and that they smell so foul that they choke her breath off. The thought forms are all round and oval and so sicken her that, if Robert were a real person, she would "crack him over the head." At other times she believes that Robert covers her with male substance, which causes her to have male sensations, which penetrate to her spine and solar plexus and choke them.

She is very much afraid that, if she had sexual intercourse with Robert, she might become pregnant by him and, since she believes it possible to be impregnated by a spirit, she is terrorized for she does not want children, even by an earthly person. She states that she is very much afraid of all men, but that she would not mind marrying a man if he were "like Dad," who is nice and quiet and good. All thought of sexual relations is distinctly abhorrent to her and filthy.

At the time of her menstrual periods Robert is especially troublesome and she insists that "it is a dirty trick to bother a girl at that time." At this time particularly he tries to get into bed with her and to have sexual intercourse with her. She refuses him by saying, "no," and then begins to talk with some other spirit, which breaks up the vibrations of Robert and sends him away. She is usually terrified by his conduct and is up a great part of the night, "talking, concentrating and sending out strong thought waves."

The patient's ideas of spiritism and occultism are not well systematized, but they have the following premises, which are persistent:

She believes that there are good and bad spirits and that we all become spirits when we leave this earth. It is the duty of spirits to advance to higher learning and this is done by progression from plane to plane. We may be on earth many times, being reincarnated, and each time we die our spirits acquire more knowledge and are graduated to higher planes. Her friend, Robert, is on the first or lowest plane, because "he always wants to stick around me," and because "his life and thoughts are so low." She believes that spirits residing on the lower planes can come to the earth, but that this is seldom done by spirits on the higher planes. A psychic can talk to these superior spirits, but not the average psychic, for the average psychic can get only to the second spiritual stage.

The reason that females are more psychic than males is because they are not so coarse and, being more delicate, they can get into better vibration with the spirits. Spirits' vibrations are supposed to be very delicate. She believes that every one sends out thought vibrations, which can be heard and interpreted, if one has the patience to practice getting into the same vibration with the person throwing out the thoughts. She reported that she heard the strong vibrations which she had asked the doctor to send out to counteract those of Robert and that they had a beneficial result. She believes that she can foretell the future, but she has never received from spirits anything of national import—merely those things which relate to herself or to her family, things that might happen in the next few days or a year. For example, she was told by one of her spiritual guides to go to a certain place to get work, which she did and was successful. She believes that most mediums are "a bunch of hokum" when they say that they can call up spirits at any time. She was born to be psychic and a medium, but she has never tried to act as a professional. She does not approve of talking about these things and never discusses them with any one except her father, or occasionally with her mother, sister or brothers. She has never heard anything funny from spirits, as she does not take in any "comedy stuff."

Her idea is that the soul is a thin, vapory substance, which is very delicate and fragile. It can be seen by a psychic and is bound to the body by a thin, silver-like cord substance, which breaks when one is dead, but stretches when the soul leaves the body, as, for instance, on an astral journey. The cord is broken only by God's will. She believes that it is possible for the soul to leave the body on astral travels, which she has taken with her spiritual guide. On these trips the soul leaves the body in an easy and gentle manner; the cord stretches and, although there is no pain in the experience, it is all very strenuous. Attempts to steal the soul, such as those to which she is subjected by Robert, are painful.

She has three or four spiritual guides, who have been with her for a long time—practically since early childhood. Her first guide was an Indian, whom she first saw at the age of five or six. He is a doctor, is large and heavy-set and is several hundred years old. Now and then he gives her messages of prophecy, usually respecting personal and family matters and occasionally some advice.



She has a Japanese girl-guide, who appears to be about 18 years of age, but who may be much older in the spirit world. Her name is Ho'san. She has had this guide for some seven or eight years. One of her guides is a German lad named Albert. He, like the rest, gives her messages in broken English, but nothing that is of any particular importance. Besides these guides there are spirit-beings higher than guides who are called "Birds of Karma," meaning "circumstances," *i. e.*, spirits who guide her over the circumstances of life. These spirits pre-ordain our wills. In appearance they are large, with birdlike wings and with faces, hands and bodies like those of animals. They are superior in every way, but she remarks that their wings do not look like those one sees in church windows. They are very gentle and can speak any language. Their chief purpose is to be guides to life and they are the spirits that take souls on astral travels.

She has been on several astral journeys, one of her guides taking her on a trip to some strange Pacific island. She put her soul-hand into his and he said, "Millie, don't be scared." On the trip she saw many strange birds of brilliant plumage and very strange people, who looked like a cross between Indians and Chinese. The country was mountainous with clouds of purple. While there she saw a little village and remembers seeing an old woman scrubbing her steps and sidewalk of colored marble. On another trip she went floating through water to Japan and there she saw Japanese people and tried to speak to them but received no response. Occasionally, while on one of these journeys, people speak to her and say, "Hello, spirit," and she replies, "I am no spirit." She recalls that on another occasion she had the sensation of passing through beautiful gardens and of seeing beautiful flowers. Such travels began when she was a child and, though lasting but a few minutes, they left her very tired afterwards. Though in the flesh she is unable to swim she was, nevertheless, led through the water by her guide and upon return found herself drenching wet.

She first began going to spiritist meetings at the age of 14, but she had always heard of them from her father. She went once a week and liked the meetings very much, but recently her attendance has been less frequent, for all her powers are spent in trying to get rid of Robert. She does not try to get impressions at the meetings as others do, but prefers to listen to the lectures. She has

enjoyed the few books that she has read on spiritism, but they have not aided her in establishing communications with the spirit world. She seldom talks about spirit affairs to others, because she fears that most people will think her crazy.

She is definitely impressed with the reality of the spiritist concept, and explains her experiences by declaring that she was born a psychic and a medium. Her mother has always discouraged her interest in the subject and often says to her, "For the Lord's sake, shut up." Her brothers and sisters joke her about her guides and ask her how "the chief" is, but this seldom makes her angry.

Not long ago the following amusing discussion took place at the dinner table showing the reactions of the family to the subject. Millie suddenly told her father that she saw a spirit. The father began to question her regarding it and as the discussion progressed the mother announced that "if Millie and her father were going to talk about such nonsense as seeing spirits in the dining-room she was going to leave the table." His reply was: "Mother, why don't you show some common sense?"

#### COMMENT.

This case offers something of a problem in diagnosis but taking all the factors into consideration we are strongly of the opinion that it is a schizophrenia. There are, however, many elements in the symptomatology which suggest a psychoneurosis. Although a psychometric test was refused by the patient she is obviously not defective in intelligence nor does she seem to show evidences of mental deterioration. She has a disturbance of affect, demonstrated largely in her anxiety state, but lacks any of the features of true psychotic depression or exhilaration.

It is evident that from earliest childhood she has been dominated by her father, upon whom she has undoubtedly fixed her sexual emotions. It is interesting to note that she abhors the idea of sex relations with any man unless it were some one "like Dad"; also that the spirit "Robert," who torments her with sexual thoughts and temptations, is much older than she and once in real life probably made sexual advances to her.

Further evidence of her psychoneurotic trends are found in the very active fantasy life begun in her early childhood, even before

she could have had much understanding of her father's religious philosophy. He, however, impressed upon her very strongly that she was an unusual child and decidedly psychic—a factor that cannot be disregarded as playing a part in fantasizing. The interest which she developed in spiritism shortly after the age of puberty probably links up with markedly repressed sex urges, which came out later in the character of her spiritualistic hallucinations. It might be interpreted that in the spirit world she was enacting her frustrated incestuous desires. The episode which occurred while she was at work marked the beginning of invalid symptoms and was undoubtedly of an hysterical nature. Her invalidism keeps her now in constant contact with her adored father.

On the other hand it is quite obvious that she has been definitely seclusive all her life despite her adjustment to school and work life. She began hearing voices and dealing with imaginary people at the age of six, but apparently did not link them up with the spirit world until 15 or 16 years of age. From that time her hallucinations assumed greater importance in her life and went much beyond the usual concepts of spiritism. As shown in the review of the subject of spiritism the average "psychic" or medium has only fragmentary or doubtful hallucinations of hearing or vision. Our patient on the contrary has gone so far as to hear, see, feel and smell spirits and thoughts and reacts violently to them. Furthermore the bulk of her contacts with spirits have become more and more distressful and annoying to her—a decided contrast to the inane and innocuous messages received by the average "spiritualist" from deceased persons. There is a distinct persecutory element in the whole spirit relationship now and a paranoid attitude is likewise shown in her very obvious distrust of people and her disinclination to cooperate in the physician's efforts to help her. She goes so far, however, as to ask the doctor to prescribe some earthly medicine to counteract the spirit persecutions.

It therefore seems possible to consider this a case of psychoneurosis in the beginning, but later a definite schizophrenic reaction type.

In the differential diagnosis the question of *folie à deux* naturally arises. Wood<sup>4</sup> published the report of several members of one family all of whom developed a psychosis at the same time. There were two brothers and three sisters. The eldest brother,

aged 45, became psychotic and four days later the brothers and sisters were all found very much excited, shouting, fighting, incoherent and harboring delusions of a religious character.

Rhein<sup>5</sup> reported three instances of *folie à deux*: (1) A man in comparatively good health and normal mentality developed a psychosis a short time after his wife became insane. They both had paranoid delusions with visual and auditory hallucinations of identical character. The wife's was the dominant personality. (2) In two sisters, one, who had the stronger personality, became psychotic and imposed a similar secondary psychosis on the weaker sister. They had lived intimately together for 20 years and both evidenced similar paranoid reactions. (3) A woman of 43 developed a psychosis characterized by paranoid ideas and auditory hallucinations. She had slept in the same room as her mother and sister for 16 years and 6 weeks after her psychosis began her mother developed an identical type of psychosis. A sister also developed a similar type of mental disorder later and a second sister was found to have definite evidences of mental disease. Rhein quoted three types of *folie à deux* as classified by Hoffman in 1846. The terms are self-explanatory and are: 1. *Folie imposée*; 2. *Folie simultanée*; and 3. *Folie communiquée*.

McWilliams<sup>6</sup> reported a case of a paranoid husband transmitting his delusion to his wife, who proved to be hysterical. Lasegue and Falret<sup>7</sup> have stated that contagious insanity requires certain special conditions, viz., 1, the same family life; 2, the same sentiments; 3, the persons must be apart from other influences; 4, one must play the active rôle.

Cases in which spiritualistic delusions occur as such are comparatively rare and no case has been found in the literature that parallels the one reported here.

Wimmer<sup>8</sup> reported a case of manic-depressive psychosis complicated by spiritualistic ideas and hallucinations in a woman of 42. He mentions the blending of religious mystic hallucinations with erotic and blasphemous ideas and believes that in some cases the ordinary mental disease assumes features picked up at spiritualistic meetings. The clinical picture is somewhat like that of hysteria or the delirium and passionate demoniacal possessions of the Middle Ages. In these apparently functional types nothing

new is ever produced or imagined, but the modern type may include rappings, automatic writing, trance-like states, etc., borrowed from actual experiences from attending seances.

#### CONCLUSIONS.

This case is of particular interest because of the paternal psychopathy with strong spiritistic religious leanings and the ready assimilation of similar spiritualism by the daughter. The patient would seem to have begun as a definite psychoneurosis, but with increase in age swung more definitely into a mental condition resembling schizophrenia. Curiously enough her paranoid trend has remained attached to the "spirits" and no known fixation to people or things in real life has occurred. It must be admitted, however, that she has a very definite attitude of suspicion towards people and refuses to trust any one outside her own family and one of the physicians.

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# THE CONCOMITANCE OF ORGANIC AND PSYCHOLOGIC CHANGES DURING MARKED IMPROVEMENT IN SCHIZOPHRENIA.

## A CASE ANALYSIS.

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This paper embodies a study of concomitant psychic and organic findings in a case of schizophrenia, catatonic reaction type, which progressed from a condition of profound stupor to a state of apparent social recovery. The material is presented to portray the relationships, whether causal, resultant, or merely coincidental, existing between physical and mental states. The case studied is peculiarly fitted for such a portrayal inasmuch as there occurred in the clinical course of his illness three definite psychiatric pictures with each of which was obtained a cross-sectional psychological study extending over a period of a month. This case is the only clear-cut instance of the sort among a total of 63 schizophrenic patients studied by the Research Service, where extensive concomitant studies have been made during the actual periods of clinical change. The method of study was that of the Seven Months' Study Plan.<sup>1</sup> This comprised a social service history, determination of the initial mental and physical states, the clinical course with detailed longitudinal psychiatric study, and periodic physiological cross-sectional studies. The purpose of this method was the study of fluctuations, changes, and constancies, both physical and mental, with regard to temporal relationships—particularly those of concomitance—as a means of determining ultimate sequences. From such an investigation as this, in conjunction with

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With the collaboration of the staff of the Research Service.

<sup>1</sup> Hoskins, R. G., *et al.*: A Cooperative Research in Schizophrenia. *Arch. Neurol. and Psychiat.* 30: 388, 1933.

other similar studies, it may be possible to secure the information which will lead to the progressive differentiation of sub-entities in schizophrenia.

The history and the findings on this patient are given below:

The patient, G. F., No. 175, is an unmarried white male of Irish descent, now 24 years of age, who was admitted to the Boston Psychopathic Hospital on May 31, 1931, and discharged to the Worcester State Hospital five days later. The physician's certificate on admission described him as mute, resistive, and depressed.

The *family history*, which is inadequate, reveals a relatively high incidence of cardiovascular disease on both sides of the family. The paternal grandparents died of "shock" and the maternal grandparents died of "heart trouble." The patient's father, aged 65, suffers from nephritis and arteriosclerosis, and is in the Worcester State Hospital with an organic psychosis. The mother, aged 57, complains of "high blood pressure." The patient is the fourth of five children. An older brother died of "bleeding from the lungs" in 1927 and an older sister died of "stomach trouble" in 1928.

The *home situation* has always been on a marginal economic level. The parents complained interminably and indulged in frequent derogatory comparisons of the home situation with that of the original home in Ireland, which they left when the patient was three years old. After the age of 12 the patient had little happy contact with any members of the family except his youngest brother. Incessant quarreling, bickering, and general dissatisfaction constituted the home atmosphere.

The *personal history* of the patient is deficient in many regards. His birth, considered normal in character, occurred February 13, 1908. Childhood development is reported to have been normal until the age of eight or nine, when a period of obstinacy and incorrigibility was noted. This behavior difficulty was associated at least chronologically with "growing pains" in the legs, causing some acute suffering. At about the age of 14 *pavor nocturnus* occurred, characterized by terrifying dreams of being taken away to some unknown place. At about the same time there occurred a period of rapid growth. His educational achievement was "average" until he failed in the first year of high school at the age of 15, when he withdrew to attend night school. There his performance lagged far behind his expressed ambitions.

His *industrial history* indicates good ambition and drive, but poor powers of work adjustment and a tendency to become easily dissatisfied with the work and his fellow-workmen.

The *medical history* reveals attacks of measles and of pertussis at about the age of four or five years, "growing pains" at eight or nine years, and a broken nose from a blow with a baseball bat at the age of 12 or 13. This was followed later by breathing difficulty, supra-orbital headaches, and a nasal discharge. The breathing difficulty and the nasal discharge were relieved by an operation in 1929, but the headaches have continued. At the age of 14 rapid growth occurred, accompanied by a tendency to become easily fatigued and a marked appetite for sweets.

The *psychosexual history* is scanty. The only information obtained concerned a brief caution about "self-abuse" some years ago and limited contact with the opposite sex because of his feeling that he was too handicapped financially for any social activities.

The *present illness* is believed to have become evident first in a change of personality occurring at the age of 12 years. Previously the patient was even-tempered, friendly, active, extravertive, and likeable. He was looked upon as a normal, happy boy. After the age of 12 he became seclusive, fearful of competition, cheated at games, was selfish, obstinate, surly, unfriendly, unhappy, and profoundly dissatisfied with his total situation. At the age of 16 increased irritability was observed and he seemed to have ever-increasing difficulty in adjusting with everybody. He became more and more dissatisfied with his home situation, his ancestry, and the social status of the family, and was imperious and demanding in his attitudes and complaining in behavior. His vanity and conceit became overweening and he expressed inordinate ambitions about becoming a wealthy landowner, a millionaire, a singer, an artist, and a "crooner." Most of his energies were absorbed by these rather grandiose ideas. At the age of 20, in 1928, he became depressed and discouraged, apparently because of the family's temporary dependence upon charity. In January, 1931, the patient complained greatly of fatigue and headaches, and again became much depressed and discouraged, and "nervous and irritable." He quit work in May because of this condition. On May 17 he was noted as quiet, inactive, and unresponsive. He suddenly declared, "I'm not going to die. I'll live this time." He complained of a strange, overpowering feeling of weakness and sickness. He was taken to the Cambridge Relief Hospital, where he is said to have been accused of masturbation. Following this his speech became halting in character and he stood about rigidly, seemed confused, and finally appeared to lose the ability to speak. He was sent to the Boston Psychopathic Hospital on May 31, 1931. There he explained, "I've been a fool in everything. I thought I was dead. I've done too much for anyone to help me." Mental examination otherwise revealed a mute, apparently depressed, agitated, and pre-occupied patient. On June 4, 1931, he was transferred in an essentially unchanged condition to the Worcester State Hospital with a suggested diagnosis of dementia præcox.

*Physical examination* upon entrance revealed some dehydration, motor retardation, and resistiveness, but otherwise there was no definite evidence of physical disease observed or disclosed by the laboratory procedures.

*Mental examination* shortly after admission revealed him to be practically mute. He told very briefly of hearing voices say unpleasant things and he was found to be disoriented, but otherwise he was inaccessible. He was seclusive in behavior and his appearance suggested mental retardation and depression. A *psychometric examination* was attempted on July 16, 1931. He was mute, dazed, stuporous, and uncooperative, and his performance was unsatisfactory. On the Kent-Shakow Formboards a questionable mental age of five years, four months was obtained, but otherwise results were negligible. Except for an increase in his stuporous state, no marked change in his condition occurred to the date of his admission to the Research Service July 23, 1931.

The *mental examination* made at this time was summarized as follows: "He was untidy, incontinent, and accustomed to stand about mutely for long periods of time in a rigid posture. He required feeding, dressing, and similar care. He was resistive to attempts to move him, and made little or no response to pin pricks or other stimuli. When asked to shake hands he responded by slight pressure with his fingers. He passively permitted movements of his limbs. The muscles of his neck and upper extremities were relaxed while those of the legs were somewhat rigid. His hands were cold and cyanotic. No *cerea flexibilitas* was noted. His facial expression was blank and his eyes were staring in expression. He executed simple commands slowly, showing both initial and executive retardation. No evidence of emotional response was noted or elicited, nor was any interest manifested in his surroundings."

At a diagnostic staff meeting on July 24, 1931, the patient was *diagnosed* as suffering from *schizophrenia, catatonic reaction type*, and given a *prognosis* of *social recovery*; i. e., sufficient recovery to warrant return to the community.

Until August 16 the patient continued essentially as described on July 24. In addition, salivary retention was noted and there was also a slight increase in weight. On August 16, 1931, the first study period of the Seven Months' Plan was begun. No essential change was noted in his mental state during this entire period. He was passively submissive to the tests, mute, untidy, passively seclusive, inactive, and incontinent. He seemed out of contact with his surroundings and was unresponsive to stimuli. He was given a *psychometric examination* on August 17, 1931. He was pre-occupied, rather stuporous, and his performance was unsatisfactory and invalid although representative of his mental state. A "performance" test mental age of seven years, six months was obtained. No language tests could be given. On September 9 he was noted to do a little swabbing in a mechanical fashion. He went to the occupational therapy shop upon request where he made some feeble, ineffectual attempts at wood-working. He continued throughout this period to require constant supervision. Essentially no information was elicited or noted regarding his ideational content, since rapport could not be established.

*Physical examination* disclosed a stooped youth, 180.6 cm. tall, with disproportionately long arms, somewhat under-nourished. One pupil was found to be oval but otherwise the eyes were normal. The thyroid by palpation showed a slight diffuse enlargement. Reflexes were very much diminished, but equally so. Roentgen ray examination of the head showed asymmetrical sinuses, with the right smaller than the left.

The average oxygen consumption rate (Table I) during this period was 83 per cent of the standard normal. The range was 78 per cent to 90 per cent, with the lowest rate probably the most representative.<sup>2</sup> Systolic and diastolic blood pressures averaged 115 and 84 respectively, with minimal levels of 108 and 74. The pulse

TABLE I.  
OXYGEN CONSUMPTION STUDIES.

	First period. 8/20/31.	Second period. 11/12/31.	Third period. 2/4/32.
Oxygen rate .....	78	Test Unsatis-	94
Blood pressure .....	108/78	factory	130/78
Pulse .....	64-64		62-64
Temperature, rectal .....	97.2		99.0
Respiration .....	13-14-14		15-16-17
	8/21/31.	11/13/31.	2/5/32.
Oxygen rate .....	81	75	100
Blood pressure .....	122/88	108/58	94/40
Pulse .....	61-58	57-57	58-64
Temperature, rectal .....	97.2	98.6	98.4
Respiration .....	15-14-14	12-11-12-12	14-14-14-14
	8/22/31.	11/14/31.	2/6/32.
Oxygen rate .....	84	84	107
Blood pressure .....	124/96	94/60	118/76
Pulse .....	66-62	60-52	63-62
Temperature, rectal .....	97.0	98.0	99.2
Respiration .....	18-18-18	11-12-15	16-16-15
	9/1/31.	11/24/31.	2/16/32.
Oxygen rate .....	90	74	105
Blood pressure .....	108/74	90/40	112/68
Pulse .....	54-56	59-58	64-60
Temperature, rectal .....	96.8	98.0	99.0
Respiration .....	13-11-12	15-13-12-13	15-13-14

rate varied between 54 and 66. The rectal temperature was low, ranging from 96.8° to 97.2° F.

The urine studies (Table II) are difficult to evaluate. The volume for the first period averaged 2750 cc., but the low total

<sup>2</sup> Hoskins, R. G., and Walsh, Anna: Oxygen Consumption ("Basal Metabolic") Rate in Schizophrenia. Arch. Neurol. and Psychiat., 28: 1346-1364. December, 1932.

TABLE II.  
URINE STUDIES.

	First period		Second period		Third period. (catheterized).	
	8/30/31.	9/1/31.	11/24/31.	11/24/31.	2/14/32.	2/16/31.
Volume, cc. ....	3960	1550	1360	1670	4360	4695
Total solids, gms./100 cc. ....	83	47	35	66	81	111
Total nitrogen, gms./100 cc. ....	12.26	6.74	7.23	11.53	11.62	15.58
Urea nitrogen, gms./100 cc. ....	10.89	5.83	6.04	9.48	9.81	12.10
Creatinine nitrogen, gms./100 cc. ....	.53	.28	.33	.57	.67	.67
Residual nitrogen, gms./100 cc. ....	.41	.38	.39	.79	.65	.90
Specific gravity .....	1.009	1.013	1.011	1.017	1.008	1.010
Indican, colorimetric .....	0	0	0	0	0	0
Urobilinogen, colorimetric .....	0	0	0	0	0	0
Sediment .....	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.



nitrogen and the minimal creatinine nitrogen values for the second collection suggest an incompleteness of the sample. Nevertheless the patient showed a urine output double the average volume of our normal controls living in a similar environment, namely, 1328 cc. The urinary findings otherwise were not remarkable except for their variation. The total nitrogen indicated a fairly satisfactory level of protein metabolism.

Table III, which includes other physiological studies, reveals in the tabulations under "First Period" the following findings: The galactose tolerance was 20 gm., which, according to Rowe,<sup>3</sup> is at the lower level of normality. Study of the gastro-intestinal tract activity revealed an atonic stomach and a moderately delayed emptying time of 96 hours for the colon. The morphological findings of the blood were normal, as was also the sedimentation rate, indicating absence of infections or organic destructive processes. The chemical constituents of the blood and the blood gases were all within normal limits, but the fasting blood sugar at 86 mgm. in both of two tests was near the lower limit of normality. Afternoon blood pressure and pulse rate were normal. The patient's weight was 23 per cent below the Metropolitan standards for his height and age. The bromsulphthalein test indicated normal liver function within the limitations of that test. The dynamometer test showed low values; possibly because of lack of cooperation.

The *inter-test* period extended from September 13 to November 7, 1931. During this time slow, gradual improvement was noted in his ward behavior. He seemed to develop a little more contact with his surroundings, to respond more promptly to stimuli, and to stare a little less. This improvement was most noticeable in the last week of the period, when he became more tidy in his personal habits and began replying briefly in faint whispers to questions and looking about him as if somewhat interested. Also, during the second month of the period he began to work a little in the occupational therapy shop, but performed in a mechanical fashion, although during the last week he seemed to show some interest and pride in his work. No additional psychiatric data were obtained.

The *second study period* extended from November 8 to December 5, 1931. At the time of the mental examination during the first

<sup>3</sup> Rowe, A. W.: The Metabolism of Galactose. I. The Threshold of Tolerance in Normal Adults. Arch. Int. Med., 34:388-401, 1924.

TABLE III.

	First period. Stuporous 7 yrs., 6 mos. (perform.)	Second period. Improved 10 yrs. 4 mos. (Otis) 13 yrs. (perform.)	Third period. Approximately recovered 16 yrs. 4 mos. (Stanford) Superior (perform.)
Mental state .....			
Mental age .....	129-58.5 77%	135-61.2 80%	149-67.6 89%
Weight (lbs. and kg.) .....	40-30	80-80	115-80
Weight (Metropolitan standards) .....	96 hrs.	24 hrs.	48 hrs.
Dynamometer (lbs.) .....	98.6°-99.8° F.	97.0°-100.2° F.	97.0°-100.0° F.
Colon emptying time .....	(Not determined)	3645	5475
Rectal temp. (afternoon monthly range) .....	100/78	62.6	84.2
Blood volume, cc. ....	60	132/94	138/84
Blood volume (cc. per Kg. of body weight) .....	5,080,000*	66	69
Blood pressure (afternoon resting) .....	4,670,000	4,440,000	4,860,000
Pulse (afternoon resting) .....	8570	4,080,000	4,560,000
Red blood cell count .....	15	9750	7220
White blood cell count (average of 2) .....	17.33	14.7	15.5
Hemoglobin (average of 2) gm./100 ml. ....	12.77	12.83	19.06
Arterial oxygen, vol. per cent. ....	(Not determined)	7.23	8.64
Venous oxygen, vol. per cent. ....	(Not determined)	(Not determined)	Art. 7.46—Ven. 7.33
Blood pH .....	53.40	55.20	50.62
Arterial CO <sub>2</sub> , vol. per cent. ....	59.64	61.48	61.35
Venous CO <sub>2</sub> , vol. per cent. ....	33	24	33
Blood total non-protein nitrogen, mgm./100 ml. ....	3.7	4.4	4.2
Blood uric acid .....	86-86	118-101	99-91
Blood sugar, mgm./100 cc. ....	Normal	Normal	Normal
Bromsulphthalein test .....	20	Unsatisfactory	20
Galactose tolerance test, grams .....	0.15	0.00	0.04
Blood sedimentation rate, mm. per minute .....			

\* Probably due to dehydration.

week he was noted as markedly improved. There was some spontaneity of speech and he answered a few questions in a whisper, but without giving very much information. He showed more affective response, smiled a little, and seemed pleased at the opportunity of talking to the examiner. He was noted as swabbing on the ward and working in the occupational therapy shop. His urinary and fecal incontinence in large part had disappeared. He showed interest in his surroundings, although he was still somewhat retarded and slow in his movements and he did not participate actively in the ward activities. On November 9 and 10 a *psychometric examination* was given. Mental ages of 10 years, 4 months and of 13 years, respectively, were secured on the Otis S. A. Intermediate and the "performance" tests. His powers of attention were fairly good and he showed good persistence and some degree of auto-criticism. Comprehension was fair, but responses were slow. However, the test results were not considered valid, but were regarded as indicating marked improvement over the previous findings. Throughout the period he was cooperative on test procedures and he became increasingly active and alert, manifesting feeble tendencies to mingle socially with the other patients. His work performance improved and he began assuming responsibility for small tasks, although he was not persistent. He became more interested in wood-carving, but worked slowly and ineffectually at his task. He was oriented correctly and seemed to be in good contact with his surroundings. At times he manifested a considerable amount of insight. There were brief periods of a depressive character noted throughout the study period when he spoke in a low tone and seemed unhappy. His response to family and other visitors indicated fair interest and pleasure.

At the beginning of the second period *physical examination* disclosed cyanosis and coldness of the extremities. He was still undernourished but the nutritional index had improved slightly from 77 per cent to 80 per cent of normal.

The oxygen consumption rate, however, had decreased from an average of 83 per cent to one of 77 per cent of normal. The lowest rate of the second series was also lower than that of the first, the respective values being 78 and 74 per cent. The blood pressure had dropped from an average of 115/84 to 97/52. The pulse was also somewhat slower. At the same time the body temperature of the

patient showed an increase. The average was  $98.2^{\circ}$  as compared with the preceding  $97.0^{\circ}$  F. This apparent contradiction between the increase in the temperature and the lessening of the oxygen consumption rate, blood pressure, and pulse probably means that there was a nearer approach to basality of the test conditions than had been achieved in the first period.

The polyuria previously noted had disappeared, with a normal 24-hour urinary output. However, the first collection appears incomplete, as judged by the creatinine nitrogen value. The urinary constituents otherwise were all within normal ranges.

The red blood cell count dropped to an average of 4,260,000, but the leucocytic and differential counts and the sedimentation rates were normal. The constituents of the blood showed a distinct drop in the total nitrogen from the previous values of 33 mgm. to 24 mgm., the lower limit of normality. The blood uric acid was definitely increased from 3.6 mgm. in the first period to 4.3 mgm. This latter finding was slightly higher than our normal average of 3.9 mgm. The total blood volume was found to be 3645 cc., with a value of 62.6 cc. per kg. of body weight. These findings are definitely low, but the possibility of defective circulation may have precluded accurate findings. The venous oxygen was found to be 7.23 volumes per cent as compared with the text-book normal values of 10 to 18 per cent and the average value of 11 per cent for our own controls living in a similar environment, and the finding of 12.77 volumes per cent for the stuporous state. We have noted similar or even lower values in other cases of schizophrenia. This finding also is suggestive of a sluggish peripheral circulation. The arterial oxygen was also low but the blood gases otherwise were normal. The resting afternoon pulse rate had increased from 60 to 66 and the blood pressure from 109/78 to 132/94. Galactose tolerance was not satisfactorily determined. The results of the bromsulphthalein test were again normal. Readings of the dynamometer test had increased, though they were still below the normal values. Rectal temperature taken on the ward during this period was approximately normal in its range. The colonic stasis had disappeared, with an emptying time of 24 hours as compared with the previous 96 hours.

The *second inter-test period*, extending from December 6, 1931, to January 30, 1932, showed a slow, steady continuance of the

patient's improvement, until by the end of January he had apparently reached what appeared to be a complete recovery from his catatonic stupor. The end of the period found him alert, cooperative, in good contact with his surroundings, pleasant and sociable, but rather unwilling to work and interested only in drawing pictures, writing in his diary, composing stories and poems, and working on his autobiography. He was given parole during the first of January and spent his time on parole wandering about the grounds either alone or in company with another patient much younger than himself. He continued his work in the occupational therapy shop, where he exhibited much pride and interest in his work but nevertheless was an irregular attendant. He was considered to work only about half as well as the normal workman. When interviewed he was responsive to approaches but in general tended to be withdrawn and seclusive, and to lapse into states of pre-occupation. He showed much interest in social activities, attending dances and taking part in a minstrel show. He was observed usually to be cheerful, complacent, and good-humored, although occasionally he seemed depressed and spoke about feeling unhappy about his situation. He also gave an account of his ideational content during his stuporous state. He described this stuporous state as a dreamy condition, at which time he had believed himself surrounded by important people in a scientific institution, specifically the Babson Statistical Institute. He told of feeling himself hypnotized and of being fastened to the floor by some strange attraction so that he could not move. He also experienced a thirst that distressed him and compelled him to drink much water, although strange forces and voices tried to make him endure the thirst. He related imagining himself to be a king, a prince, a great man, with a large retinue of serving people, and whenever he looked out of the window he could see pageants of gaiety, all conducted for his benefit. In the ward personnel he identified Einstein, the King of England, the President, all the great men of the age, and he expressed the belief that he had built up a phantasy life in which he could live all the grandiose day-dreams of his prepsychotic period. As time passed he gradually reached the realization that he was in a hospital, coming to this realization by hearing announcements over the ward radio that the broadcast was coming from Station WSH (Worcester State Hospital.) He also told of some persecutory delusions

and of numerous auditory hallucinations. As he narrated these ideas he exhibited an excellent insight, but at the same time he manifested a continuance of his grandiosity about his personal talents and potentialities, and his judgment in relation to himself was considered not to be very discerning. Although he had discarded the phantasies of his stupor state, he entertained the belief that by hard work and earnest application he could acquire a fortune of \$50,000 within the space of a few years. Also, he expressed the belief that the fiction and poetry he was writing would set a new style in American literature, and he was not receptive to criticism in these regards.

The *third study period* extended from January 31 to February 27, 1932. During this time his general conduct continued much the same as it had during the preceding inter-test period. He took a little more part in the social activities, working well in the occupational therapy shop. He was less self-satisfied, superior, and grandiose in his attitude. During the *mental examination* he protested about the repetition of the test procedures and expressed the belief that he was entitled to special privileges. He was unwilling to work and spent much of his time out-of-doors or else drawing and writing, holding himself aloof from all except the better grade of patients. He was friendly with the physicians and psychologists, but not very cooperative with the nurses. He seemed indifferent as to personal appearance. He talked readily and freely but was evasive when questioned closely and seemed distressed by any topic relating to his psychosis. His mood was one of contentment, cheerfulness, and self-confidence, with some boastfulness. Occasionally he manifested some anger and depression, but these were appropriate to the occasions. He reviewed his recollections of the phantasies related to his stupor and seemed to have a good degree of insight. On the whole, the psychiatric findings for this period suggested that the patient had reached his normal pre-institutional level. The *psychometric examination* revealed a Stanford mental age of 16 years, 4 months, with an intelligence quotient rating, on the 14-year basis, of 117. The "performance" mental age was "superior" and the Wells "memory quotient" was 111 per cent. The patient was cooperative, attentive, and comprehended well, and the results of the examination were considered representative and valid. Subsequent examinations have verified this.



Substantially the same findings were made in the *physical examination* of the third study period as in previous periods with the exception that nutrition was improved and that his weight had increased from 80 per cent to 89 per cent of the Metropolitan standards.

Oxygen consumption rates showed a marked increase, ranging from 94 per cent to 107 per cent, with an average of 101 per cent. Basal blood pressure averaged 113 systolic and 65 diastolic, with a range of 94 to 130 and 40 to 78 respectively. The average basal pulse rate was 62, with a range of 58 to 64. The basal rectal temperature ranged from 98.4° to 99.2° F., with an average of 98.9° F. These findings all suggest a normal physiological state.

Catheterized 24-hour urine specimens were obtained for this period. A polyuria exceeding that of the first period and amounting to 4527 cc. was found. The creatinine nitrogen values were both 0.67 gm.—a high value for his weight of 149 pounds. Otherwise the urinary findings were within normal ranges.

The galactose tolerance was again 20 gm. as in the first period.

The secondary anemia noted previously was found to persist but was somewhat less extensive than in the previous period. The rest of the blood morphological picture was again normal. The total blood volume, however, was found to be markedly increased to 5475 cc. as compared with 3645 cc. for the second period. Blood volume per kg. of body weight had increased from 62.6 cc. to 84.2 cc., an increase of 34.5 per cent. This rise with no significant change in the cell count suggests a marked increase of activity in the hematopoietic system, since otherwise the count would have been reduced by dilution. However, no conclusions are warranted because of the possible unknown factor of defective circulation during the second period. There was a rise in the total nitrogen of the blood to the level of the first period, with blood uric acid remaining at a slightly elevated level of 4.2 mgm. Venous oxygen was still low but the other blood gases and pH were normal. The liver function, as shown by the bromsulphthalein and McClure tests, was apparently normal. The increased readings for the dynamometer test indicated good strength and cooperation. Colonic emptying time was 48 hours.

From March to November, 1932, the patient's mental state has remained essentially the same as it was at the close of the last study

period. He has shown much insight into the nature of his previous delusions and hallucinations but he has tended to continue the grandiosity in his self-evaluation. At first he considered himself superior to work, but gradually consented to do a minimal amount of labor in return for parole privileges. His work performance has been that of a 12- to 14-year-old-boy, and he works only under supervision at simple tasks. Whenever questioned about his ideational content he tends to be evasive, uncommunicative, and to complain that he is not properly appreciated, that he is very sensitive, and that everyone should be careful not to hurt his feelings. He expresses rather grandiose ideas about his abilities and hopes to make a fortune of \$50,000 in the course of two or three years.

During the past few months he has become slightly more communicative, particularly in regard to abnormal mental trends. He admits that he has continued to experience auditory hallucinations more or less continuously since the onset of his psychosis. He tends to look upon them as imaginary and as his own thoughts, but he describes them as voices which give him simple commands, such as to sit down or to stand up. No visual hallucinations are admitted. In general, he has become very well contented with his situation in the hospital and seems satisfied to remain. He associates freely with certain of the better-class patients, but tends to avoid contact with the employees and to assume a haughty and superior air toward them. In brief, he remains at a constant level, and his mental state appears to be essentially the same as that previous to the acute development of psychosis.

Shortly after this paper had been submitted for publication the patient was sent home on an indefinite visit. Six months later he returned for an interview with the examiner. He reported that he had been living on a farm with his brothers where they were clearing cutover land. His nutritional state was good; he was deeply tanned and his hands were thickly calloused. His appearance was neat and he was normally friendly and sociable, and manifested appropriate affective responses. A careful mental examination elicited no psychotic symptoms nor were any noted. The auditory hallucinations formerly so persistent had ceased about five months previously. He summarized a fairly extensive account of his psychotic experiences in the following words:

"I guess I just let my wishes and my day-dreams run away with me until I couldn't control them. I didn't keep a hold on reality and I was just helpless."

Regarding his previous grandiosity he declared "Making a big fortune—just a kid idea—what I am aiming at now is working hard, earning a decent living; just keeping happy with my feet on the ground; no more big ideas for me."

In brief the patient appears to have made and to be continuing a fairly complete social recovery.

#### DISCUSSION.

The reader will note that no apparent significance has been accorded the first 23 years of the patient's life. This seeming oversight has been intentional in this paper. The fact is well recognized that his developmental history might account in part or in full for his present condition, but it is not within the scope of this paper.

In summary, during the period of acute stuporous catatonia the patient showed evidence of mental retardation, poor capacity of response in psychiatric and psychometric examinations, and several deviations from organic normality. He was under-weight, had an atonic stomach, moderate colonic stasis, diminished oxygen consumption, reduced body temperature, and a fairly well marked polyuria. His fasting blood sugar and galactose tolerance were at the lower extreme of normality. Blood pH and blood volume were not determined during the first period. Otherwise he seemed to be physiologically normal.

During the second period his psychiatric condition was definitely improved. He was more accessible in psychiatric examination and psychometric test results were notably better, but again the results were largely indeterminate because of lack of good cooperation. In the organic sphere body temperature increased slightly more than a degree, a datum probably indicating a lessening of the hypometabolism which characterized both the first and second periods. The actual oxygen consumption rate as well as the blood pressure and the pulse rate decreased, hence the evidence as regards hypometabolism is thus equivocal unless it is granted that the patient was probably more nearly in a true basal state for the second determinations. The nutritional state improved somewhat

and the colonic stasis disappeared. The urine output was reduced to normal, with a normal composition. A mild secondary anemia became apparent despite an apparently sub-normal blood volume. The venous and arterial oxygen contents of the blood were definitely low. The total nitrogen of the blood dropped from 32 to 24 mgm., a datum which cannot yet be explained. In general, our patients have shown normal blood nitrogen values irrespective of the depth of psychosis.

Further improvement in the clinical picture was noted in the third period. Psychiatrically the patient had attained a level of recovery warranting return to the community. In the sphere of the psychometric examination he was found to have superior intelligence, both on language and performance tests, and the findings were considered valid and representative. In the physiologic sphere the hypometabolism had disappeared and the blood pressure, pulse rate and temperature were in accordance with his normal oxygen consumption rate. On the other hand, the urine volume, determined from catheterized specimens, showed a marked increase, with the only questionable abnormality of the constituents in the creatinine nitrogen values, the significance of which is not known. The blood morphological findings showed even less anemia than in the previous period, but the count was still under the text-book normal. The blood volume per kilogram of body weight showed a marked increase of 34.5 per cent over that of the previous period, with no significant change in cell count. This relative constancy of the cell count suggests either a more accurate blood volume determination as a result of improved circulation or a marked increase of activity in the hematopoietic system. Venous oxygen was still definitely low. The total blood nitrogen had again returned to the normal level of the first period. The nutritional state showed definite improvement which correlated well with the oxygen consumption rate. In other regards the patient's physiologic state appeared to be normal.

In brief, this study has served to exclude a considerable number of physiological functions as significantly correlated with the psychiatric condition, at least in this patient. The constituents of the blood in general have remained within normal ranges throughout, which has been true of the chemical constituents of the urine.

The possible relationship of the pituitary to the psychosis presents an interesting problem. The history of the patient indicates

evidence of over-activity of this gland at about the age of 14. As is well recognized among endocrinologists, over-activity is frequently followed by a functional depression as is shown, for example, in the later stages of acromegaly. The rather striking polyuria manifested during the first and third periods supports the idea of a pituitary deficiency, fluctuating in character. However, there was lacking the high blood uric acid and the high galactose tolerance which Rowe <sup>4</sup> includes as characteristic features of the pituitary deficiency. Furthermore, both the polyuria and the blood uric acid were highest in the third period when the patient was least psychotic. These metabolic findings, as a matter of fact, could be ascribed equally well to hypothalamic disturbances. In view of the close functional relationship between the hypothalamus and the pituitary, perhaps the safest assumption would be that both were in a measure physiologically abnormal.

The possibility of pituitary involvement is substantiated further by special Roentgen ray examination made of the patient's head and anthropometric measurements taken in a study conducted by Dr. Hector Mortimer. He discovered an increased thickness of the skull tables, increased size of the frontal sinus and of the maxillary and mental processes, and increased ossification at the skull sutures, but the sella turcica was normal. The anthropometric measurements show disproportionately long upper extremities with a relatively poor development of the torso and of the osseous framework, as may be noted in the accompanying photographs. The sitting height index, however, has a normal value of 0.526. These findings, in conjunction with a history of head trauma, personality changes, sudden rapid growth, and an excessive appetite for carbohydrates at about the age of puberty are suggestive of a period of over-activity of the pituitary.

In conclusion, we have presented the psychiatric, psychologic and physiologic findings over a period of seven months in a case of schizophrenia, catatonic reaction type. Changes and fluctuations have occurred concomitantly in the observations made in each of the three fields. The mental picture shows three definite phases: first, stupor; second, a recovery from the stuporous state; and third, a condition of approximate recovery from the psychosis.

<sup>4</sup> Rowe, A. W.: Studies of the Endocrine Glands. II. The Pituitary Endocrinology, 12: 245-322, 1928.

Concomitant with the study of the mental states there are three physiological cross-sections. Tables of findings show the nature and extent of the measured physical and psychological changes.

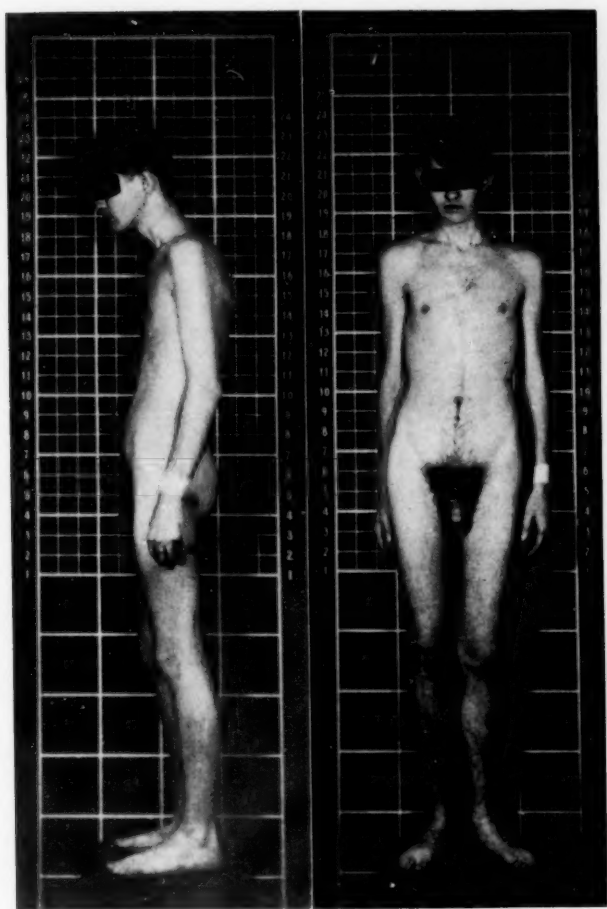
For the greater part, the organic data were within the normal range. However, the classification of these laboratory data as normal or abnormal gives rise to a most important question in the study of such physiological data in mental disease, namely, what may be considered "normal"? May it not be that "normal" physiological findings are not normal by virtue of the failure of proper systemic response, an illustration of which is the "normality" of the white blood cell count in certain infectious diseases? May not malfunction in one system occasion a secondary failure in another, or even prevent a proper physiological response to a disturbing factor and thus lead the observer astray by the "normality" of his findings?

The data obtained reveal coincidental deviations in the psychic and physiologic states of the patient and this suggests the possibility of significant correlations between the organic and psychic changes. However, whether this concomitance is causal or resultant or merely coincidental cannot be determined until more studies of this nature have been made. In brief, for an adequate study of dementia præcox careful consideration must be given to an analysis of all inter-relationships, parallelisms, and contrasts in the physical and mental data obtained. The method of approach illustrated in this case analysis permits a precise study of the phenomenological nature of dementia præcox or schizophrenia as it is found in the patient as a whole. It affords a comprehensive view and a perspective of the whole problem impossible of attainment by investigations, however intensive, of individual aspects such as thyroid studies on one group of patients, ideational content on another, and blood vascular system on a third. In brief, only by some method of study which allows the simultaneous investigation of many aspects of the disease can a satisfactory approach be made to a determination of temporal sequences and functional interdependence.

#### SUMMARY.

Detailed psychiatric, psychological and physiologic studies were made for a period of seven months on a patient suffering from schizophrenia, catatonic reaction type.





G. F. No. 175.



Three distinct psychiatric states—namely, stupor, recovery from the stupor and a condition of apparent recovery from the psychosis—were found, for each of which a physiological cross-sectional study was made.

During the stuporous state he was under-weight, had diminished oxygen consumption, reduced body temperature, polyuria and delayed colonic emptying time. Other physiological findings were essentially normal.

During the second period he had recovered from the stupor, had gained weight, manifested a slight, equivocal decrease in his oxygen consumption rate, a slight increase in body temperature, mild secondary anemia, a questionable low blood volume and low venous and arterial oxygen content. Other findings were within normal ranges.

During the third period the patient appeared to have reached the level of his pre-institutional mental state, had gained weight and manifested a normal oxygen consumption rate, with normal body temperature. Except for a marked polyuria and low venous oxygen content, the physical data showed no apparently significant deviation from the normal.

There is evidence suggestive of a pituitary deficiency manifested at about puberty, according to the history, and also during the first and third periods of study. However, the fluctuations noted could likewise be attributed to an abnormal functioning of the hypothalamus.

In brief, coincidental with the changes in the psychiatric and psychological spheres, there have been corresponding or opposite fluctuations and variations in the organic sphere. Also, in some instances, an apparent independence has been indicated by physiologic constancy. Accordingly, when more studies of this nature have been made, an answer to the question of functional interdependence may be achieved.

## Notes and Comment.

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THE HANDICAPPED CHILD.—In an address before the Conference on Handicapped Children held recently in New York, Colonel H. Edmund Bullis, executive officer of the National Committee for Mental Hygiene, set forth what he called a Design for Living, which is of paramount importance not only in developing compensatory health activities in handicapped children, but also in the much wider application of mental hygiene and prophylaxis generally.

In the building up of a rugged personality that will meet without mishap the emergencies of life, Colonel Bullis stresses four foundations which should be laid in early life: "(1) a *job* we are interested in; (2) worth while *avocations*; (3) friendly *intimacies*; (4) a *philosophy* of life to meet our needs."

Once these fundamentals have been established, life may be made richer and resourcefulness and resistance strengthened by the cultivation of habits and the development of personality qualities as follows: "*face reality; expand your areas of interest; be sympathetic to those less fortunate; cultivate a love for beauty.*"

"It may be safely said that there are few people in our mental hospitals today who have builded their lives according to the specifications I have outlined." The speaker pointed out that the President of the United States, himself once a handicapped young man, had in his own life demonstrated the practicability of this formula. "President Roosevelt has always shown a real interest in the *jobs* that have been assigned him. Even in these busy days he takes time for some of his *avocations*, such as swimming and stamp collecting. We all know of his ability to make real *friends*. His *philosophy* of life is well founded on religious principles. He certainly has *faced reality* the past year, not hesitating to meet unpleasant situations promptly. From early boyhood he has been continually *expanding his areas of interest* on land and sea. His *love for beauty* is shown in his splendid collection of marine art and

ship models. His *sympathy* for those less fortunate is demonstrated by his keen interest in the work with crippled children at Warm Springs."

REVISED CLASSIFICATION OF MENTAL DISORDERS.—The revised classification adopted by the Committee on Statistics and approved by the Council of The American Psychiatric Association at a meeting held in New York City, December 27, 1933, for publication in the forthcoming new edition of the Standard Classified Nomenclature of Disease, is presented herewith.

This classification, which has also been approved by representatives of the American Neurological Association, is submitted at this time in order that those states having supervisory boards which are responsible for the statistical data from the institutions under their charge, may begin work on this statistical program at an early date. It is suggested by the committee that it is desirable that the new classification be put into effect at once in all mental hospitals throughout the country, as the records of the United States Bureau of Census will undoubtedly be based upon it.

Attention is also called to the fact that the condensed form of the classification, which is likewise presented below, may be employed by the mental hospitals for all practical purposes.

#### MENTAL DISORDERS.<sup>1</sup>

(List Approved by the Council of The American Psychiatric Association.)

- 00-1 *Psychoses due to or associated with infection.*
- 00y-147\* *Psychoses with syphilis of the central nervous system.*
  - 002-147 Meningo-encephalitic type (general paresis).
  - 003-147 Meningo-vascular type (cerebral syphilis).
  - 004-147 Psychoses with intracranial gumma.
  - 00y-147\* Other types (*to be specified*).
- 008-123 Psychoses with tuberculous meningitis (24).
- 008-190 Psychoses with meningitis (unspecified) (79a).
- 003-163 Psychoses with epidemic encephalitis (17).

<sup>1</sup> Wherever desired, symptomatic manifestations may be coded and named in addition to the diagnosis. See Supplementary Classification (page 411) † or under Organ (Category 5.5).

\* Y signifies an incomplete diagnosis. It is to be replaced, whenever possible, by a code digit signifying specific diagnosis.

† Pagination refers to the first edition of "A Standard Classified Nomenclature of Disease" (1933).

- 004-196 Psychoses with acute chorea (Sydenham's) (87b).  
009-1y0\* Psychoses with other infectious disease (*to be specified*).  
009-1xx Post-infectious psychoses (*infection to be specified*). See pages 53-56.

00-3 *Psychoses due to intoxication.*

- 001-332 Psychoses due to alcohol (75).  
002-332 Pathological intoxication (75).  
003-332 Delirium tremens (75).  
004-332 Korsakow's psychosis (84).  
007-332 Acute hallucinosis (75).  
00y-332\* Other types (*to be specified*) (75).  
002-300 Psychoses due to drugs or other exogenous poisons.  
002-310 Psychoses due to metals (*to be specified\*\**) (77c).  
002-350 Psychoses due to gases (*to be specified\*\**).  
002-370 Psychoses due to opium and derivatives (76b).  
002-3y0\* Psychoses due to other drugs (*to be specified\*\**). See pages 60-62.

00-4 *Psychoses due to trauma (traumatic psychoses).*

- 009-42x Traumatic delirium (194b).  
009-4x9 Post-traumatic personality disorders.  
003-4xx Post-traumatic mental deterioration.  
003-4y0\* Other types (*to be specified*).

00-5.0 *Psychoses due to disturbance of circulation.\*\*\**

- 003-512 Psychoses with cerebral embolism (82b).  
003-516 Psychoses with cerebral arteriosclerosis (97).  
009-5xx Psychoses with cardio-renal disease (95b).  
003-50y\* Other types (*to be specified*).

00-5.5 *Psychoses due to convulsive disorders (epilepsy).*

- 003-550 Epileptic deterioration (85).  
003-560 Epileptic clouded states (85).  
003-55y\* Other epileptic types. See pages 423-424.

00-7 *Psychoses due to disturbances of metabolism, growth, nutrition or endocrine function \*\*\**

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\* Y signifies an incomplete diagnosis. It is to be replaced, whenever possible, by a code digit signifying specific diagnosis.

\*\* For list of poisons see page 60.

\*\*\* Record the primary diagnosis when occasion demands. See page 3.



- 001-79x Senile psychoses (162).
  - 002-79x Simple deterioration (162).
  - 003-79x Presbyophrenic type (162).
  - 004-79x Delirious and confused types (162).
  - 005-79x Depressed and agitated types (162).
  - 006-79x Paranoid types (162).
- 007-79x Alzheimer's disease (84).
- 001-796 Involutional psychoses (84).
  - 002-796 Melancholia (84).
  - 003-796 Paranoid types (84).
  - 00y-796\* Other types (*to be specified*).
- 00x-770 Psychoses with diseases of the endocrine glands (*to be specified*).
- 009-712 Exhaustion delirium (87b).
- 009-766 Psychoses with pellagra (62).
- 009-yxx\* Psychoses with other somatic diseases (*to be specified*).
- 00-8 Psychoses due to new growth.\*\*\*
- 003-8xx Psychoses with intracranial neoplasms (53, 54d, 55d).
- 009-8xx Psychoses with other neoplasms (*to be specified*) (53, 54d, 55d).
- 00-9 Psychoses due to unknown or hereditary causes, but associated with organic changes.\*\*\*
- 006-953 Psychoses with multiple sclerosis (87b).
- 004-953 Psychoses with paralysis agitans (87b).
- 004-992 Psychoses with Huntington's chorea (87b).
- 004-9y0\* Psychoses with other brain or nervous diseases (*to be specified*).
- 00-x Disorders of psychogenic origin or without clearly defined tangible cause or structural change.
  - 002-x11 Anesthetic type (87b). *Indicate symptomatic manifestations should be coded and named in the diagnosis. See Supplementary Classification (page 411) or under Organ (Category 5.5).*
- Hysteria.
  - 002-x00 Anxiety hysteria (87b).
  - 002-x10 Conversion hysteria (87b).
    - 002-x11 Anesthetic type (87b). *Indicate symptomatic manifestations,<sup>2</sup> e. g.: x12 amaurosis, x06 deafness, 55x anesthesia of . . . , x41 anosmia.*
    - 002-x12 Paralytic type (87b). *Indicate symptomatic manifestations,<sup>2</sup> e. g.: 561 monoplegia, 563 hemiplegia, x32 ophthalmoplegia, 956 aphonia.*

<sup>2</sup> See list on pages 411 ff.

\* Y signifies an incomplete diagnosis. It is to be replaced, whenever possible, by a code digit signifying specific diagnosis.

\*\*\* Record the primary diagnosis when occasion demands. See page 3.

- 002-x13 Hyperkinetic type (87b). *Indicate symptomatic manifestations,<sup>2</sup> e. g.: 225 tic (facial or other), 222 spasm, 228 tremor, 20x postures, 936 catalepsy, 934 convulsions, 302 stammering, 301 stuttering.*
- 002-x14 Paresthetic type (87b). *Indicate symptomatic manifestations,<sup>2</sup> e. g.: 506 dysesthesia, 507 paresthesia.*
- 002-x15 Autonomic type (87b). *Indicate symptomatic manifestations,<sup>2</sup> e. g.: 154 hyperidrosis, 153 edema, 159 ulceration.*
- 002-x16 Amnesic type (87b). *Indicate symptomatic manifestations,<sup>2</sup> e. g.: 901 fugue, 911 amnesia, 917 somnambulism, 936 catalepsy, 902 trance, 903 dissociated personality, 931 delirium, x07 hallucination of hearing, 904 dream states, 933 stupor.*
- 002-x1x Mixed hysterical psychoneurosis (87b). *Indicate symptomatic combinations by using the various symptoms in the categories given above or on pages 411-422.*
- Psychasthenia or compulsive states (87b).
- 002-x21 Obsession. *Indicate symptomatic manifestations,<sup>2</sup> e. g.: 905 délire de toucher, 906 counting (steps, etc.), 908 urge to say words, 971 kleptomania, 974 dipsomania, 972 pyromania, 973 trichotillomania, 907 folie de doute.*
- 002-x22 Compulsive tics and spasms. *Indicate symptomatic manifestations,<sup>2</sup> e. g.: 225 tremor, 227 occupation spasm or tic, 226 habit spasm or tic, 224 spasmus nutans, 301 stuttering, 302 stammering.*
- 002-x23 Phobia. *Indicate symptomatic manifestations,<sup>2</sup> e. g.: 983 claustrophobia, 984 syphilophobia, 985 agoraphobia, 986 misophobia.*
- 002-x2x Mixed compulsive states. *Indicate symptomatic combinations by using the various symptoms in the categories given above or on pages 411-422.*
- 002-x30 Neurasthenia (87b).
- 002-x31 Hypochondriasis (84).
- 002-x32 Reactive depression (simple situational reaction, others).
- 002-x33 Anxiety state.
- 002-x0x Mixed psychoneurosis (87b). *Indicate symptomatic combinations by using the various symptoms given above or on pages 411-422: 981 anxiety, 982 depression, 415 fatigue.*
- 001-x10 Manic depressive psychoses (84).
- 001-x11 Manic type (84).
- 001-x12 Depressive type (84).
- 001-x13 Circular type (84).
- 001-x14 Mixed type (84).
- 001-x15 Perplexed type (84).
- 001-x16 Stuporous type (84).
- 001-x1y\* Other types (84).

<sup>2</sup> See list on pages 411 ff.

\* Y signifies an incomplete diagnosis. It is to be replaced, whenever possible, by a code digit signifying specific diagnosis.

- 001-x20 Dementia præcox (schizophrenia) (84).
- 001-x21 Simple type (84).
- 001-x22 Hebephrenic type (84).
- 001-x23 Catatonic type (84).
- 001-x24 Paranoid type (84).
- 001-x2y\* Other types (84).
- 001-x30 Paranoia (84).
- 001-x31 Paranoid conditions (84).
- 001-x40 Psychoses with psychopathic personality (84).
- 001-x50 Psychoses with mental deficiency (84).

00-y *Undiagnosed psychoses.*

y0-y *Without psychosis.*

NOTE.—This diagnosis is to be used only in psychiatric and psychopathic hospitals, where it is required to account for patients submitted for observation or allowed to remain in hospital for other legitimate reason. Besides being classed as "Without psychosis" the case is also recorded in positive terms as:

- 930-yxx\* Epilepsy (85).
- 000-332 Alcoholism (75).
- 000-3xx Drug addiction (76b).
- 000-yxx\* Mental deficiency (87b). *See page 83.*
- 000-163 Disorders of personality due to epidemic encephalitis.
- 000-x40 Psychopathic personality.
  - 000-x41 With pathological sexuality. *Indicate symptomatic manifestations,<sup>2</sup> e. g.: 991 homosexuality, 992 erotomania, 993 sexual perversion, 994 sexual immaturity.*
  - 000-x42 With pathological emotionality. *Indicate symptomatic manifestations,<sup>2</sup> e. g.: 041 schizoid personality, 042 cyclothymic personality, 913 paranoid personality, 043 emotional instability.*
  - 000-x43 With asocial or amoral trends. *Indicate symptomatic manifestations,<sup>2</sup> e. g.: 044 antisocialism, 047 pathological mendacity, 046 moral deficiency, 048 vagabondage, 987 misanthropy.*
  - 000-x4x Mixed types. *Indicate symptomatic manifestations by using the various symptoms in the categories given above or on pages 411-422.*

*Primary behavior disorders.*

- 000-x61 Simple adult maladjustment.<sup>2</sup>  
Primary behavior disorders in children.
- 000-x71 Habit disturbance. *Indicate symptomatic manifestations,<sup>2</sup> e. g.: 031 nail biting, 032 thumb sucking, 741 enuresis, 034 masturbation, 033 tantrums.*

\* Y signifies an incomplete diagnosis. It is to be replaced, whenever possible, by a code digit signifying specific diagnosis.

<sup>2</sup> See list on pages 411 ff.

- 000-x72 Conduct disturbance. *Indicate symptomatic manifestations,<sup>2</sup> e. g.: 04x truancy, 050 quarrelsomeness, 051 disobedience, 059 untruthfulness, 054 stealing, 055 forgery, 056 setting fires, 053 destructiveness, 057 use of alcohol, 058 use of drugs, 052 cruelty, 995 sex offenses, 049 vagrancy.*
- 000-x73 Neurotic traits. *Indicate symptomatic manifestations,<sup>2</sup> e. g.: 223 tics, 226 habit spasm, 917 somnambulism, 302 stammering, 009 overactivity, 980 fears.*

#### AMERICAN PSYCHIATRIC ASSOCIATION.

CONDENSED FORM OF NEW CLASSIFICATION ADOPTED BY THE COMMITTEE ON STATISTICS AND APPROVED BY THE COUNCIL DECEMBER 27, 1933.

A condensation of the New Classification is outlined below. Its arrangement makes it possible to compare the newer statistics on mental diseases with statistics of past years, particularly for the major psychoses. In addition, it presents a convenient 24-group classification for the compilation of the standard statistical tables.

- 01 Psychoses with syphilitic meningo-encephalitis (general paresis).
- 02 Psychoses with other forms of syphilis of the central nervous system.  
Meningo-vascular type (cerebral syphilis).  
With intracranial gumma.  
Other types (to be specified).
- 03 Psychoses with epidemic encephalitis.
- 04 Psychoses with other infectious diseases.  
With tuberculous meningitis.  
With meningitis (unspecified).  
With acute chorea (Sydenham's).  
With other infectious disease (to be specified).  
Post-infectious psychoses (infection to be specified).
- 05 Alcoholic psychoses.  
Pathological intoxication.  
Delirium tremens.  
Korsakow's psychosis.  
Acute hallucinosis.  
Other types (to be specified).
- 06 Psychoses due to drugs or other exogenous poisons.  
Due to metals (to be specified).  
Due to gases (to be specified).  
Due to opium and derivatives.  
Due to other drugs (to be specified).
- 07 Traumatic psychoses.  
Traumatic delirium.  
Post-traumatic personality disorders.  
Post-traumatic mental deterioration.  
Other types (to be specified).

- 08 Psychoses with cerebral arteriosclerosis.
- 09 Psychoses with other disturbances of circulation.
  - With cerebral embolism.
  - With cardio-renal disease.
  - Other types (to be specified).
- 10 Psychoses with convulsive disorders (epilepsy).
  - Epileptic deterioration.
  - Epileptic clouded states.
  - Other epileptic types.
- 11 Senile psychoses.
  - Simple deterioration.
  - Presbyophrenic type.
  - Delirious and confused types.
  - Depressed and agitated types.
  - Paranoid types.
- 12 Involutional psychoses.
  - Melancholia.
  - Paranoid types.
  - Other types (to be specified).
- 13 Psychoses due to other metabolic, etc., diseases.
  - With diseases of the endocrine glands (to be specified).
  - Exhaustion delirium.
  - Alzheimer's disease.
  - With pellagra.
  - Other somatic diseases (to be specified).
- 14 Psychoses due to new growth.
  - With intracranial neoplasms.
  - With other neoplasms (to be specified).
- 15 Psychoses associated with organic changes of the nervous system.
  - With multiple sclerosis.
  - With paralysis agitans.
  - With Huntington's chorea.
  - With other brain or nervous diseases (to be specified).
- 16 Psychoneuroses.
  - Hysteria (anxiety hysteria, conversion hysteria and subgroups).
  - Psychasthenia or compulsive states (and subgroups).
  - Neurasthenia.
  - Hypochondriasis.
  - Reactive depression (simple situational reaction, others).
  - Anxiety state.
  - Mixed psychoneurosis.

- 17 Manic-depressive psychoses.
  - Manic type.
  - Depressive type.
  - Circular type.
  - Mixed type.
  - Perplexed type.
  - Stuporous type.
  - Other types.
- 18 Dementia Præcox (schizophrenia).
  - Simple type.
  - Hebephrenic type.
  - Catatonic type.
  - Paranoid type.
  - Other types.
- 19 Paranoia and paranoid conditions.
  - Paranoia.
  - Paranoid conditions.
- 20 Psychoses with psychopathic personality.
- 21 Psychoses with mental deficiency.
- 22 Undiagnosed psychoses.
- 23 Without psychoses.
  - Epilepsy.
  - Alcoholism.
  - Drug addiction.
  - Mental deficiency.
  - Disorders of personality due to epidemic encephalitis
  - Psychopathic personality.
    - With pathological sexuality.
    - With pathological emotionality.
    - With asocial or amoral trends.
    - Mixed types.
- 24 Primary behavior disorders.
  - Simple adult maladjustment.
  - Primary behavior disorders in children.
    - Habit disturbance.
    - Conduct disturbance.
    - Neurotic traits.



## Association and Hospital Notes and News.

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INTERNATIONAL ASSOCIATION FOR SPEECH AND VOICE TRAINING.—The sixth Congress of the International Logopædic and Phoniatic Association will be held in Budapest, September 5-7, 1934. Information may be obtained by addressing the Präsidium of the Association at Ferstelgasse 6, Vienna IX, Austria.

INTERNATIONAL CONGRESS OF THE ANTHROPOLOGICAL AND ETHNOLOGICAL SCIENCES.—Some years before the Great War the Royal Anthropological Institute of Great Britain invited a small international committee to consider plans for holding an international congress on the anthropological sciences. It was hoped that this might take place in 1916; the war makers however had planned otherwise. It is now announced that the first session of this International Congress will convene in London, July 30 to August 4, 1934, and it is proposed that meetings shall be held at four year intervals. The scope of the Congress is as broad as that of the scientific study of man in all its departments. Lord Onslow is president of the Congress and the presidents of the several sections are as follows: Professor G. Elliot Smith, Anatomy and Physical Anthropology; F. C. Bartlett, Psychology; Professor C. B. Fawcett, Demography and Population; Dr. A. C. Haddon, Ethnography; Rev. Edwin Smith, African Ethnography; Henry Balfour, Technology; Professor C. G. Seligman, Sociology; Professor E. O. James, Religions; Dr. Alan H. Gardiner, Language and Writing.

Information may be obtained from the Secretaries, A. H. Brodric and Professor J. L. Myres, care of Royal Anthropological Institute, 52 Upper Bedford Place, London, W. C. 1.

VIENNA SUMMER SCHOOL IN PSYCHOLOGY.—The Psychological Institute of the University of Vienna will hold its third annual summer school in psychology for American students from July 9, until August 9, 1934. The courses, which are taught in English, include the following: Language and Personality (Karl Buehler).

Childhood and Adolescence (Charlotte Buehler), Biographical Methods (Charlotte Buehler), Viennese Tests for Children, Experimental Psychology, Business and Social Psychology.

The University of Kentucky is again supervising these courses and will grant six semester-hours university credit for the work done in Vienna. For further details address the Educational Director, Dr. Henry Beaumont, University of Kentucky, Lexington, Kentucky.

AMERICAN PHYSIOTHERAPY ASSOCIATION MEETING.—The American Physiotherapy Association announces its 13th annual convention at the Hotel Cleveland, Cleveland, Ohio, on June 13-16, 1934. Excerpts from the program are: Wednesday, June 13, 8 p. m. Address of Welcome. Clarence H. Heyman, Associate Orthopedic Surgeon to Lakeside and Mt. Sinai Hospitals, Secretary of the Academy of Medicine of Cleveland.

Arthritis as a General Medical Problem. R. L. Haden, M. D., Chief of Medical Staff of Cleveland Clinic.

Thursday, June 14, 2.30 p. m. Demonstration of cases at Rainbow Hospital for crippled children, South Euclid, Ohio, by Maxwell Harbin, M. D., Associate Professor of Orthopedic Surgery, Western Reserve Medical School, Cleveland.

Friday, June 15, 2 p. m. Low Back Disability, Its Etiology and Treatment. Wallace S. Duncan, M. D., Associate Orthopedic Surgeon to Cleveland Clinic.

Symposium on Postural Problems.

Health Examination in the Detroit Public School System.

## Book Reviews.

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PSYCHIATRY IN EDUCATION. By *V. V. Anderson, M. D., M. A.* (New York and London: Harper and Brothers, 1932.)

This book discusses the application of psychiatric principles in education, and while it describes in detail the aims and methods of the Anderson school in particular, it has valuable suggestions for the education of children generally. Throughout the entire book the author emphasizes the "individual who is being educated," tries to understand all the various problems connected with the development of that individual, and then shows how educational, psychiatric, medical, social, psychological and other measures may be best used to favor the "total development process." Having first studied all available facts so as to get a clear picture of the personality of the child, he works out a program for the child's day "from waking till bedtime."

The discussion of "Psychiatry in College" is based primarily upon the author's seven years experience as Director of the Department of Psychology and Psychiatry at R. H. Macey's among whose employees were several thousand college graduates. From failures observed, the author is convinced that "these young men and women did not receive in their college careers that sort of education which is fundamental to successful living"—"to the functioning of a personality capable of utilizing all its assets," and he concludes that "the real measure of the college's usefulness to the individual is the sort of personality make-up that he has achieved as a result of the resources of the particular institution. The experience of an industrial organization in dealing with college graduates is related, with an analysis of successes and failures over a period of years and the results are, to say the least, disheartening. For example in 1930, 344 college men and women applied for jobs and were examined psychiatrically. Of these two were outstanding, and 30 others were promising but not ready for executive training, while in 1932 of 442 similar candidates applying 18 were outstanding enough for a regular job, 10 were accepted for a short course of training and 39 were accepted for jobs marked promotional. The astounding statement is made that 85 to 90 per cent of applicants from colleges are rejected by this organization for any job."

After reviewing the present status of mental hygiene in colleges, and its aims as outlined by well-known mental hygienists, Dr. Anderson argues for the setting up of psychiatric and mental hygiene departments in universities to study and evaluate the human material entering them with the object of securing "the greatest possible development of the whole individual."

Apparently the colleges have not been doing a good job, or at least there is much still to be desired in a college education! At any rate there is much food for thought, and we hope, reason for action.

From this background of success and failure of college men and women Dr. Anderson builds up the main part of his book—his description of a school for primary and secondary education under psychiatric direction. He states, "We have centered our entire organization with its academic, psychological, psychiatric, medical, physical training, occupational, recreational and social facilities upon the student's whole personality as the unit. In the light of the individual's entire case record, his physical and mental make-up, his attitudes and habits, his possibilities and disabilities, his home and other relationships, we have formulated an individual program of development." Not through the whole book is this ideal lost sight of, and there is every evidence of thoroughness and understanding in both the diagnostic and training methods. The school is said to have the same general equipment as most private schools, but all its activities are under psychiatric direction. There are from 60 to 65 pupils—a post-graduate group doing work of the college level, a high school group, junior high school group, elementary grade, primary group and a group of psychiatric cases in a hospital school. The staff numbers 22. Considered academically the pupils fall into several groups:

1. Well adjusted, taking full preparatory course for college.
2. Group having particular subject difficulties.
3. A slow moving group having poor school background.
4. A group not capable of passing standard school requirements.
5. Psychopathic or psychoneurotic children.

The diagnostic procedures, program, record keeping and various departments, with their objectives are outlined, and the achieved results are reviewed. Five case histories show the working out in detail of the methods used with adolescents. Important among the author's conclusions are:

1. The most important work is in preserving normal personalities.
2. Teacher selection is important. Only well-adjusted people should be chosen to teach.
3. The curriculum should suit the needs of the individual pupil.

The junior high school group is similarly dealt with and there are several common sense remarks on pitfalls of this period. The illustrative cases describe (1) behavior problems, (2) nervous children and (3) special educational disabilities, and the 75 pages so used are packed with human interest, and show clearly the value of personality training, habit training, integration and socialization in education.

Chapter IV deals with elementary grade pupils. Dr. Anderson criticizes the practices in "progressive education" and challenges the philosophy of interests. He says, "Many promising college men applied their energies to activities which interested them, and neglected related responsibilities that did not appeal to them. We found the individual's general attitude, insight, sense of reality and work appetite more nearly related to success or failure than his much talked of vocational interests." His approach in elementary education is to use traditional educational procedures, plus psychological and educational testing technique, plus the psychiatric view-point—"keeping the whole child as the goal." The working of the elementary school is detailed, with emphasis on habit training and personality training and motivation in

school work. Again case histories show the individual method of approach toward developing the whole personality of the pupil. The same plan is followed in describing the primary school where the child takes "his first independent step into the world around him," but in this division the actual program of one girl from 7 a. m. to 7.45 p. m. is worked out. The "cases" are not as well described as those in previous chapters, as there is considerable repetition and lack of conciseness.

In the sixth chapter "The Psychiatrist Discusses the Teacher." "No one thing in the entire educational process compares in importance with the personality make-up of the teacher," says Dr. Anderson. The items in the teacher's general qualifications which he cites are physical condition, intelligence, personality, insight, sense of reality, adaptability, integration, social adjustment, interest, sense of responsibility, resourcefulness, work habits and loyalty. "These issues evaluated through a carefully taken social history and personality study are superior to academic tests . . . etc." But how much importance do present day normal schools attach to the maturity and integration of the teachers in training?

The educational problems of children who have had encephalitis, or epilepsy or who have schizophrenic or cyclothymic personalities are dealt with in the hospital school where a treatment training régime is worked out for each individual. Such children "instead of finding school life an understanding stabilizing one, often find themselves threatened or ostracized and they withdraw further from reality." The ordinary school cannot deal with such cases and they usually drift into institutions. Dr. Anderson remarks that in many of these children the most retarding influences have come from the attitudes and behavior of parents. The case histories of individuals having encephalitis, epilepsy, schizophrenia and cyclothymic conditions are admirable.

The eighth and last chapter deals with methods used in the school, a particular discussion of diagnosis and of personality study and attitudes of the child. The value of records and follow-up in every case is shown, and there is an outline of charts used.

What clearer argument for the value of the psychiatric point of view in education is needed one does not know. While it may be said that this is a private school where conditions approach the ideal, it still follows that in any school much may be done for the individual, that the teachers should be themselves well-adjusted, and that the ideal should be to develop the whole personality of the child.

Parents, teachers and psychiatrists may all read this non-technical book with interest and profit.

E. P. LEWIS,  
Toronto.

INSANITY AS A DEFENSE IN CRIMINAL LAW. By *Henry Weihofen*. (New York: The Commonwealth Fund, 1933.)

The plan of this book is perhaps a departure in the realm of legal writing. It attempts to give and apparently succeeds in giving a complete picture of

the existing law in the United States on its chosen subject: it states the rules and gives the number of jurisdictions supporting each rule, but at the same time the psychiatric viewpoint is not omitted. For a layman with no special interest in the technical aspects of the subject the volume has perhaps not much to offer. It is in no way sensational and does not for the most part give the facts of even the leading cases quoted.

There is practically no reference to the law in any country other than the United States, except for casual mention of the early law of England on which the American criminal law regarding insanity as a defense is based.

The book contains exhaustive digests of statutes and cases, and an excellent bibliography which makes it invaluable for reference; and the clear statement and analysis of the collected data leaves the reader with the feeling that the author is entitled to speak with authority on trends of the law, and even on possible reforms. However, Mr. Weihofen errs a little on the side of modesty and refrains both from expressing his own opinions and from criticism.

The number of books already published on the subject of insanity and criminal law would make one wonder if anything remained to be said, but this book written from the legal rather than the medical angle and containing as it does not only a statement of the various rules of law, but the exact number of states supporting any given rule or its variations makes a distinct contribution to the literature. It is for example enlightening to read that in almost half of the American states irresistible impulse has been added to the "right and wrong" test of responsibility.

Methods of procedure in the various states are not neglected; indeed the author himself feels that the present tendency to attack the law from the procedural side, instead of striving to alter the "tests" as has been done in the past, will eventually accomplish the desired result. In this regard he appears to approve of Dr. Sheldon Glueck's proposed psychopathic clinics for sorting out accused persons before trial; and also the Massachusetts "Brigg's Law," which he terms "almost the only practicable recommendation looking to the sensible objective of sorting out the insane and irresponsible offenders before going through the time-and-money wasting process of a criminal trial."

One of the things that strikes the Canadian lawyer is the apparent futility of attempting to set up one definite detailed plan of reform for 48 separate and distinct criminal jurisdictions. Perhaps a better method of approaching the problem would be to enumerate principles in the hope that each state will embody them somehow or other in its legislation.

The book is concluded on an optimistic note savouring somewhat of Dean Roscoe Pound's sociological jurisprudence, implying that general reform of criminal law is progressing (though perhaps the fact that certain measures have been adopted by Mexico and the U. S. S. R. would not endear them to most legislators); and stating that when the new attitude of treating all people who transgress the law as social problems rather than as sinners is adopted, "the present problem of distinguishing between the 'sane' and the 'insane'



will be largely taken from the shoulders of lawyers, judges, and jurymen, and placed on those of persons more competent to deal with it, the psychiatrists, penologists, and criminologists."

MARGERY W. BLATZ,  
Toronto.

LA FORMACION ESPIRITUAL DEL INDIVIDUO. (PSYCHOLOGY, EDUCATION, MENTAL HYGIENE.) By *Dr. Honorio Delgado*. (Libreria, Peruana Lima, 1933.)

In this volume of 149 pages, in a concise and non-technical style, Dr. Delgado presents a short and practical summary of the several schools of psychology; i. e., Experimental Psychology, Behaviorism, etc. He reviews briefly the different aspects of psychoanalysis according to Freud, Jung, and Adler.

The book is developed in six sections. The first section is devoted to the various theories of the development of the psyche of the individual. The second deals with the significance of infant and juvenile experience. The third division reviews the various phases concerning the formation of personality and character. The author devotes considerable space to repression and the subconscious. The fourth deals with the introvert and extrovert types of personality, and he touches upon the subdivisions which may be considered under these two headings. Division five is devoted to mental hygiene in respect to his family. The sixth division summarizes the author's aim in writing this book, namely, that education is a means of assisting the individual to adjust to his environment.

This work is essentially useful to the Latin-American countries, whose problems must of necessity be somewhat different from ours in North America, although the same fundamentally. It is this type of work which is valuable to educators, students, and parents.

Unfortunately the author has not given a bibliography, but he has developed a chart showing the development of the psyche of the individual from the age of 1 year to 30 years.

JANET S. BARNES.

THE TIDES OF LIFE. By *R. G. Hoskins, Ph. D., M. D.* (New York: W. W. Norton & Co., Inc., 1933.)

This is an authoritative book the nature of which is succinctly stated in the author's prefatory remark that it attempts "to present in brief form the more significant aspects of endocrinology as known today."

Time was when scientific works were written in the main for scientists; the style was apt to be heavy, the language a species of jargon known as "technical terminology." All this was naturally over the head of the layman, with no intention that it should be otherwise. But the day not only of applied but also of popularized science has long since dawned; and in our time the foremost exponents of even the most complicated disciplines have recognized their opportunity and their obligation to write not alone for the expert but quite as much for the inquiring-minded citizenry at large. The present work

is a splendid example of the kind of scientific treatise which is at once a safe guide for the medical person or biologist, and fascinating reading for the man without an academic degree who is none the less curious about the workings of his own animate machine and the springs of his own conduct.

The author begins with the hormones, the chemical regulators of bodily and mental functions, enlivening his narrative with allusions to traditional customs and primitive beliefs. "The warrior eats the heart of his enemy to add to his own courage." From this savage practice medicine took the cue. Said Paracelsus: "Heart cures heart; spleen, spleen; lungs, lungs." Modern endocrinology however dates from the rejuvenation experiments of Brown-Séquard with extract of sex glands in 1889.

"The organs now known to produce hormones are the pituitary, the thyroid, the parathyroids, the adrenals, the pancreas, the stomach and intestines, the ovaries and the testes. Other organs probably or possibly having endocrine functions are the pineal, the thymus, the liver, the heart and the spleen." The potency of the hormones is illustrated by the fact that adrenin "introduced directly into the blood stream exerts a definitely appreciable effect when its concentration has reached only one part in four hundred millions." Of the thyroid hormone thyroxine only about one-fourth of a grain is found in the circulation at one time. Three and one-half grains make a year's supply. "But this small pinch of thyroxine spells all the difference between imbecility and normal health."

In his survey of the endocrine system, Hoskins discusses the anatomy, embryology and physiology of the several glands, the historical development of existing knowledge of their functions, some of the classic experiments which have contributed to this knowledge, the clinical results of disturbed function, treatment indications and consequences, the biology of the glands and their relationship to the development and maintenance of the individual through various life phases, their significance in the determination of personality.

Although endocrinology is one of the youngest divisions of biological science tremendous advances have been made within the past few years, and to these developments the author does full justice. We read, for example, of the remarkable properties of cortin (first described in 1929), the hormone of the adrenal cortex—that part of the gland which is essential to life. "Nothing in the whole field of medical treatment so nearly approaches the miraculous as does the restoration of a patient suffering from acute adrenal failure under the influence of cortin. The patient literally and promptly arises as though from the dead."

Findings such as this have naturally led "clinical" endocrinologists to wax enthusiastic and to promise extravagant results of treatment in the greatest variety of cases of established or assumed endocrine deficiency. The author points out how important it is to restrain judgment and to hold carefully to the hard-won physiological facts. There is timely admonition in the words of Stewart: "The contrast is great when we leave this desert, where the physiologists and experimental pathologists have wandered, striking many rocks but finding few springs, and pass into the exuberant land of clinical

endocrinology, flowing with blandest milk and honey almost suspiciously sweet."

In a chapter on "Endocrine Aspects of Reproduction" the author deals judiciously with the interplay of psychological and physiological factors. The biology of the successive stages of the menstrual cycle is carefully detailed. "Menstruation itself marks a frustration of nature—the acknowledgment of failure of fertilization."

"She is a fortunate woman whose life flows smoothly during her menstrual period. If she achieves complacency of demeanor it is evidence, often, of self-control rather than absence of difficulty. There has been much discussion of the cause of menstrual tension. . . . The menstrual discharge is initiated by a sudden low tide of ovarian hormones. Actually, therefore, the woman at this period suffers from a moderate degree of ovarian deficiency. . . . Such deficiency results in increased irritability, especially of the sympathetic nervous system. If prolonged, it may result even in change of disposition. . . . Fortunately the period of ovarian deficiency during the menstrual cycle is of brief duration and by the time the flow is over usually the nervous irritability has disappeared.

"Actually, how much of the all-too-common menstrual tension is physiologic and how much neurotic is open to question. Women who escape the unphysiologic mores of 'civilization' are likely to be little disturbed by it if they experience it at all."

In two pages at the end of this chapter the author summarizes the known endocrine facts of puberty, menstruation, pregnancy, lactation and the menopause.

The final chapter recapitulates "Some General Aspects of Endocrinology." With dramatic clarity the life processes—what is known of them—are set before us—the mutually regulating functions of hormones and the nervous system which bring it about that from protoplasm composed of substances remarkable for their instability and continuously threatened by disintegrating forces—"out of this composite instability emerges the stable individual."

In spite of the brilliant results of endocrine research, which have indeed introduced a "new physiology" and in certain specific diseases have amounted to cures little less than miraculous, this excellent treatise closes on a conservative note. Warning is again sounded against over enthusiasm in empirical therapy, the stretches of unknown territory are indicated—"in final reiteration: *More research is needed.*"

This work was a selection of the Scientific Book Club.

C. B. F.

OUR NEUROTIC AGE. Edited by *Samuel D. Schmalhausen*. (New York: Farrar and Rinehart, Inc.)

This personable tome of 531 pages might have been styled *The Neurotic Omnibus*, and the title would have understated the contents. It sets out to show that our era is ridden with neurosis in ways and degree hitherto unknown. "Never before in human history," declares introductorily the

editor, "has *homo sapiens* felt so unsolved, dissolved, so completely in a state of irresolution." A restless age, let us hasten to agree; and yet the perspective of even a cursory glance at the last two thousand years of history might reasonably suggest that the general anchorages in life today are no less secure than at several periods which might be named and toward which we do not look back with envy, however much we decry the disorders of the present. "Our age is a chaos of irreconcilable contradictions, conflicts, cleavages," continues the editor. "The literature and drama of our age mirror the psychoneurotic plight of a world that is dying." Truly the prophet Jeremiah might have written the intemperate lamentation which introduces this symposium.

There are 26 contributors whose articles are grouped in four divisions respectively entitled "Is the Normal Mind Sane?", "Beyond Normality," "The Social Background of Neurotics," "Ecce Homo Sapiens!"

A. A. Roback speaks to the question: "What is Sanity?" He discusses sanity from the legal angle, in terms of the "normal," of social adjustment, of intelligence and eminence. He finds that "there are by far fewer sane people than intelligent people. . . . Far from sanity being the property of the majority of mankind, it is to be discovered in relatively few; and there is no reason to ascribe it to any greater number of individuals than are endowed with genius; that is to say, there is a *genius relating to sanity* just as there is one relating to music, painting, literature, etc." Roback hopes "that in years to come, a series of tests will be worked out to test the relative sanity of 'sane' individuals."

Joseph Jastrow contributes an entertaining chapter on "The Maladies of Thought" teeming with the usual jastrowian sententiousness. He calls our attention to the fact that while everybody "thinks" not every one *learns* to think, and that in any event "we think first and learn how later," to our inevitable intellectual disadvantage. Kant's "Critique of Pure Reason" he suspects "may be but a noble temple for a vacant shrine."

Jastrow illustrates such common maladies of thought as "wish-thinking," the *autism* of Bleuler or the "thobbing" of Mr. Henshaw Ward. "A laboratory, as well as an armchair," says Jastrow, "may be a homestead of thobbing." Disabled thinking he traces through the devious ways of superstition and all fanatical beliefs and practises, of astrology, palmistry, phrenology, homeopathy and the cults, of all "dialectic hairsplitting and schism-making," of the meta-psychology of Freud, "which presents an amazing fertility of invention parading as reality," of the "smoke-screen of negation" of Christian Science and the "mythophobia" of Behaviorism. "Right thinking," Jastrow concludes, is "a function of right living."

In a chapter on "Homosexuality: Ancient and Modern," Phyllis Blanchard cites the prevalence of the phenomenon in primitive society and in early civilizations, culminating in the cultured states of Greece and Rome. The bitterness of church and state under the Christian dispensation has added unnecessary and unwarranted burdens to the invert's life. In nature man in common with other animals tends to homosexual practices whenever

immaturity or isolation makes heterosexual activity impossible. Treatment does not necessarily contemplate the goal of transforming the mature invert. The biological basis of intersex types makes this point clear.

In a section entitled: "Is Chastity a Virtue or a Disease," Robert Briffault has collected some instructive data on the sexual habits of mammals most closely related to man, especially of monkeys and apes. "What are usually regarded as aberrations, depravities and vices appear to be part of the normal sexual behavior of the nearest allies of mankind." Briffault deals mercilessly with the Christian Fathers for their part in the erection of prevailing "moral" standards, and vigorously criticizes Westermarck for his views, eagerly adopted by the Fathers, that Christian sex morality could be traced back to certain alleged virtuous habits among animals inferior to man. The evidence here adduced seems sufficient to refute such views.

Among primitive peoples sexual abstinence was one of the rites of mourning, a conciliatory gesture toward the ghost of the departed, but with no significance whatever as a "virtue." This was the condition which the Christians called "chastity," but which had "remained nameless in pre-Christian languages." Briffault seeks to show that conventional attitudes toward matters of sex current in western civilization are unsupported by anthropology, biology or common sense; that they are foreign to the folkways of other peoples, and are the peculiar invention of the Christian system. These arguments, cogent as they appear to be, unfortunately lose somewhat in force by the vitriolic style of the writer. Briffault sees red whenever he begins to think of the patristic writers and their doctrines.

The answer to the question with which Briffault heads his chapter he does not leave long in doubt. "Virginity is, of course, not very common in men, and statistics would probably show a notable decrease in the prevalence of the affliction among women. . . . There is no valid evidence that the savage superstition of self-mortifying chastity has in any form or in any degree beneficial physiological or psychological effects."

The chapters we have referred to have been hit upon more or less at random. Others of equal interest might have been discussed. Ruth Burr reviews the history and literature of suicide; Maynard Shipley discusses normal and abnormal alcoholism; V. F. Calverton presents a distinguished summary of the pathological aspects of contemporary literature; Ira S. Wile writes about problem parents and problem children; C. E. M. Joad describes the plight of marriage in the jazz age; and other contributors discuss various aspects of the contemporary human scene, with insistent reference to the foibles and follies of its chief actors.

Madam de Staël is credited with the observation that the more she saw of men the better she liked dogs. She would have read with relish the final section of this book wherein the lineaments of *homo sapiens* are traced in not unbecoming caricature. Here Briffault in a second contribution inveighs against stupidity, particularly the artificial and, as he believes, the unnecessary sort. Ernest Sutherland Bates achieves the literary gymnastics of setting

forth the infantilism of contemporary America, the significant fact about whose youth is "that it did not lead on to manhood but back to childhood." The hypocrisy of the national life is documented to show, in the words of the editor of the symposium, "The widening gulf between America as a fiction and America as a fact." Charles W. Ferguson describes the extravagances and excesses of our religious manias, writing apparently too early however to include the incredible crusadings of the Oxford Group. Huntington Cairns sees as a factor in the slow progress of social justice the entrenched sadism in the law. C. Hartly Grattan pictures the "Chamber of Horrors Called History," a retrospect through which he finds it "impossible to accept unquestioningly an historical philosophy which is grounded in optimism." Benjamin C. Gruenberg closes the series with some biological conceptions of life and death, not omitting "the myth of an after life."

Here then is a book containing an interesting compilation of factual data relative to contemporary living and the background upon which it has flourished forth; and likewise a parti-colored assortment of opinions from which each reader will select those which fit his temper.

C. B. F.



## CONSTITUTION.

### ARTICLE I.

NAME.—This corporation, founded in 1844 as The Association of Medical Superintendents of American Institutions for the Insane, known from 1892 to 1921 as The American Medico-Psychological Association and since 1921 as The American Psychiatric Association, is hereby continued under the last designation.

### ARTICLE II.

OBJECTS.—The objects of this Association shall be—(A) to further the study of subjects pertaining to the nature, treatment and prevention of mental disorders; (B) to further the interests, the maintenance, and the advancement of standards of hospitals for mental disorders, of out-patient clinics, and of all other agencies concerned with the medical, social and legal aspects of these disorders; (C) to further psychiatric education and research; (D) and to apply psychiatric knowledge to other branches of medicine, to other sciences and to the public welfare.

### ARTICLE III.

MEMBERSHIP.—Section I. There shall be six classes of members: Fellows, Members, Associate members, Life Fellows, Honorary members, Corresponding members.

Section II. All classes of membership except Honorary and Corresponding members shall be residents of the United States or its dependencies or British America at the time of their election.

Section III. An Examining Board of not less than five Fellows shall be appointed by the President and approved by the Council. One member of this Board shall retire each year and be ineligible for reappointment. It shall be the duty of this Board to make a report and recommendation to the Council on every application for every class of membership.

It shall also be the duty of this Board immediately after its organization and from time to time afterward to submit to the Council plans for the procedures by which it proposes to pass upon the fitness of new applicants for membership and of present members of the Association, make such other recommendations as it may deem advisable from time to time and perform such other duties

as Council or Association may assign to it. Its plans and recommendations must be approved by the Council.

Section IV. Fellows hereafter shall be chosen from members of not less than one year's standing who have specialized in the practise of psychiatry for at least six years.

Section V. Members hereafter shall be chosen from physicians who have specialized in the practise of psychiatry for at least three years.

Members shall be recommended to Fellowship as it becomes apparent that they deserve this recognition.

Section VI. Associate members shall be physicians who have had at least one year's practise in a mental hospital.

Section VII. Life Fellows shall be those who have maintained themselves in good standing as Fellows (or formerly as active members) for thirty consecutive years. They have all the rights of Fellows.

Section VIII. Honorary members shall be those who have distinguished themselves by attainments in psychiatry or related sciences or who have rendered signal service in philanthropic efforts to promote the interests of psychiatry and mental hygiene.

Section IX. Corresponding members shall be those who are qualified for Fellowship but who are not residents of the United States or its dependencies or British America.

#### ARTICLE IV.

OFFICERS.—The officers of the Association shall be a President, President-Elect, Vice-Presidents, a Secretary and a Treasurer whose duties may be combined, and a Council to include the above officers and twelve Fellows of whom the retiring President shall be one.

Vice-Presidents shall be those Fellows elected Chairmen of sections of the Association.

Past-Presidents after their service in the Council shall thereafter be ex-officio members of the Council without the right to vote.

There shall be three Auditors, one of whom shall retire each year.

#### ARTICLE V.

PRIVILEGES.—Fellows and Members only shall be entitled to vote at any meeting and Fellows only shall be eligible to office in

the Association. Life Fellows, Honorary members, and Corresponding members shall be exempt from the payment of annual dues to the Association.

#### ARTICLE VI.

**ELECTION OF OFFICERS.**—Section I. The officers and four members of the Council and one Auditor shall be elected at each annual meeting. Nominations shall be made to the Association in the order of business at the first session of the second day of the annual meeting by a committee appointed for that purpose by the President during the first month of his incumbency. Elections shall take place immediately. The nominating committee shall consist of five Fellows. It will send out its ballot in the *JOURNAL* or otherwise, to every member of the Association, at least one month before the annual meeting. Other nominations may be made from the floor.

Section II. The President, President-Elect, Vice-Presidents and Secretary and Treasurer shall hold office for one year. Councillors and Auditors shall serve three years. The President, President-Elect and the four retiring Councillors are ineligible for re-election to their respective offices for one year immediately following their retirement. The President, President-Elect, Secretary and Treasurer, shall enter upon office at the close of business at the annual meeting at which they are elected. Other officers shall enter upon their duties immediately after their election. All officers shall serve until their successors are elected, and qualified.

Section III. A majority of the members of the Council shall constitute a quorum.

#### ARTICLE VII.

**POWERS.**—The President shall preside at the annual and special meetings of the Association or Council. In his absence at any time the President-Elect shall act in his place. The President shall appoint committees of the Association.

The President-Elect shall assume the office of President at the close of the annual meeting held one year after his election.

The Secretary shall keep the records of the Association and perform all the duties that may be prescribed for him by the Council. The Treasurer, under the Council, shall receive and disburse and duly account for, all sums of money belonging to the Association;

## ARTICLE II.

**DUES.**—Each member shall pay to the Treasurer such annual dues and assessments as shall be determined by the Council at its annual meeting.

## ARTICLE III.

**RESIGNATION AND DISMISSAL.**—Any member of the Association may withdraw by signifying his desire to do so in writing to the Secretary: Provided, That he shall have paid all dues to the Association. Any member who shall fail for three successive years to pay dues after special notice by the Treasurer shall be regarded as having forfeited membership, unless such payment of dues is waived by the Council for good and sufficient reasons.

The name of any member declared unfit for membership by two-thirds vote of the members of the Council present at an annual meeting of that body, shall be presented by the Council to the Association, from which he shall be dismissed if it be so voted by a number not less than two-thirds of those present at the annual meeting, registered and voting.

## ARTICLE IV.

**UNION WITH OTHER SOCIETIES.**—When another national society with interests similar to those of this Association shall express a wish for an organic union and when this union shall be acceptable to this Association, the following plan shall be adopted:

1. A Section of The American Psychiatric Association shall be established and appropriately named.

2. The medical members of the incoming society who meet the requirements of Article III of the above Constitution, shall become Associate members, Members, or Fellows of The American Psychiatric Association.

3. The other members of the incoming society may remain as members of the Section and shall be placed on a special mailing list but shall not become members of the Association.

4. A section chairman and secretary shall be elected by the section. The Chairman who must be a Fellow, by virtue of his office shall be a Vice-President of The American Psychiatric Association.

5. The section shall arrange its own program with the co-operation and approval of the Program Committee of the Association.

6. If funds are transferred to the Council of The American Psychiatric Association by the incoming society, the funds shall be devoted to purposes specified or for purposes in accord with the objects of the donating society.

#### ARTICLE V.

DISTRICT SOCIETIES.—When any state or provincial psychiatric society or a psychiatric society representing a geographical division of the United States or British America shall signify a desire to become a district society of The American Psychiatric Association, and when this shall formally be accepted by this Association, the following plan shall be adopted:

1. The state or local district Society shall be subject to such regulations relating to reorganization and management as may be made by The American Psychiatric Association from time to time.

2. Local organizations shall be allowed to include members who are not eligible for membership in the Association and shall in general be allowed a wide latitude in their organization.

#### ARTICLE VI.

NEW SECTIONS.—The Council upon its own initiative or upon the application of not less than twenty Fellows or Members, or Associate Members, may present to the Association a proposal for a section which shall have its own special program. Upon approval of the Association the following plan shall be adopted:

1. A section of The American Psychiatric Association shall be established and appropriately named.

2. A section chairman and secretary shall be elected by the section and the chair. . . shall become Vice-President of the Association.

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